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ABSTRACT

This report investigates the question of whether a combination of attitude and achievement results of pupils can be used in an objective way to identify the more effective reading and math compensatory programs in a state. This question is held to have particular relevance in Connecticut since two-thirds of the state's compensatory programming is aimed at improving reading and math skills. Chapters focus on background and purpose, attitude responses of pupils, reading and math gains of pupils, combining attitude and achievement of pupils, additional findings, discussion of results, and value of the evaluation design used in the study. Findings indicate a low and non significant association between pupil attitude and achievement test results. Evidence of this study is considered to indicate that school districts spend more of their compensatory dollars to help those eligible children who are furthest behind in achievement. Other findings showed that reading gains equaled expectations, that poor children achieve less, and that concentration was least in large schools. More emphasis is said to be needed in selecting those most in need of help. Results are reported in the form of tables listing the outcomes of statistical analyses, together with brief descriptions. (Author/AM)

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ED117223

ATTITUDE AND ACHIEVEMENT AS MEASURES OF EFFECTIVENESS

CONNECTICUT COMPENSATORY EDUCATION PROGRAMS

Programs Supported by
Connecticut Act for Educationally Deprived Children and
Title I of the Education Amendments of 1974

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I. BACKGROUND AND PURPOSE

Introduction

The 1972-73 Compensatory Education in Connecticut[1] evaluation report recommended that Connecticut school districts provide attitude and achievement information to the State Department of Education for a study aimed at assessing the evaluation usefulness of these two measures. The purpose of the study was to attempt to answer the following question:

> "Can a combination of attitude and achievement results of pupils be used in an objective way to identify the more effective reading and math compensatory programs in a state?"

Consequently, in the spring of 1974, school districts having reading and/or math compensatory programs were asked to administer an attitude-toward-school instrument and report the findings of that administration. Also, each school district was asked to report individual achievement test results for those pupils who had taken the attitudinal instrument. (In the past compensatory education programs were asked to report only group achievement data, not individual achievement test data as well.)

Importance of Study

A recent review of large scale evaluations of compen-

satory education[2] stated that the existing efforts of state departments of education and other national studies demonstrate a great lack of fully reliable, definitive findings.

The Ninety-third Congress, acting in accord with this report, commissioned three sources to develop an improved national evaluation of Title I efforts under the new Education Amendments of 1974.

Local school districts have relatively few problems selecting evaluation measures directly related to the identified needs of their children. However, large cities and states encounter a great deal of difficulty in aggregating data from a large population and converting it into meaningful information beyond just descriptive statistics.

The question of whether a combination of attitude and achievement can be used as a measure of effectiveness in reading and math compensatory programs has particular relevance in Connecticut since two-thirds of the state's compensatory programming is aimed at improving reading and math skills.

Data Collection

In the spring of 1973 a study[3] was conducted in the state to determine the usefulness of an attitude-toward-school instrument, the School Sentiment Index.[4] (See Appendix A.) As a result, the School Sentiment Index was selected as the attitude measure for this study.

For the present study, school districts were asked to administer the appropriate level of the instrument to pupils in reading and/or math compensatory programs in the spring of 1974. A copy of each level of the instrument, instructions for its administration, and a scoring template were forwarded to each school district in April and May of 1974 along with a format for reporting annual evaluation results for compensatory education programs.

Within this format a new Individual Pupil Information Form with instructions for its completion was provided for reporting individual attitude and achievement test results for a sample of 15 pupils. (See Appendix B.)

This form was to be completed by those state and federally supported compensatory education staff members meeting the following criteria:

1. The staff member must be part of a school district compensatory program which has attitude toward school and achievement in reading or math as primary and relevant objectives for the program.

2. The staff member must be able to provide information for a randomly selected sample of a minimum of 15 pupils to whom he or she provides compensatory services and who are from grade levels two through eight.

3. The staff member must administer the appropriate level of the School Sentiment Index during the month of May, 1974 and determine the total score for each of the 15 pupils whose results will be reported.

4. The staff member must be able to provide pre- and post-test raw scores for the reading comprehension, math computations, or math concepts subtests of appropriate standardized achievement test instruments for the same pupils for whom scores on the School Sentiment Index were available.

5. The staff member must be able to provide information relating to compensatory education program efforts (e.g. number of serviced pupils, instructional hours, program costs).

6. The staff member must be able to return the completed form to the State Department of Education by June 15, 1974.

Individual Pupil Information Forms were received from 233 public and nonpublic school compensatory education staff members from 101 districts. Attitude and achievement results provided by each teacher were examined for accuracy of reporting, and inaccurately reported pupil data were eliminated. A sample size of 10 or more pupils per teacher was used for the study in order for the sample to be representative. Because of the elimination of inaccurately reported pupil data, in some cases samples within a school had to be combined to provide sufficient numbers.

School District Study Sample

Although a total of 233 compensatory education staff members provided information to the state, data from only 111 staff members (slightly less than half of the original

sample) were used in the study. The 111 compensatory staff members represented 42 school districts in Connecticut.

To insure an increased sample size for future studies, it seems appropriate at this time to note the reasons for the elimination of 122 teachers' sample groups of pupils from the actual sample used in the study.

Because the MAT Gains Tables[5] are the base used to established expected achievement gains in this study, the possibility of conversion to equivalent Metropolitan Achievement Test scores is essential. All samples involving the MAT or SAT had this potential because the single publisher of the Metropolitan and Stanford Achievement Tests provides its own tables for equating MAT and SAT subtests.[6]

The 1974 Anchor Test Study Equivalency Tables[7] allow for the equating of eight widely used reading achievement tests in grades 4-6. Therefore, for these grade levels, a wider variety of achievement tests could be included as these scores could also be converted to equivalent Metropolitan scores.

A. Problems with Conversion

1. Thirty-one teacher samples had to be eliminated from the study sample because scores from the test administered could not be converted to equivalent MAT scores using either of the above mentioned tables.

2. As stated earlier, the 1974 Anchor Test Study Equivalency Tables make it possible to equate reading scores from eight standardized achievement tests for pupils in grades 4-6. Using Anchor tables, reading scores from these tests were converted to equivalent scores on the Metropolitan to permit the use of the MAT Gains Tables.

Twenty-three teachers' samples in grade four had to be discarded because of a spring-to-spring testing pattern. Anchor Test Study Equivalency Tables are not available for grade three, and in a spring-to-spring testing pattern, fourth graders are pretested at the end of third grade.

Seventeen teachers' sample groups of pupils, post-tested with a different level of the test than used at pre-testing, had to be eliminated in certain grades because of Anchor conversion difficulties.

Four teachers' samples were discarded because an easier level of the achievement test was administered than allowed for on the Anchor Test Study Equivalency Tables.

B. Incomplete Achievement Data

Most of the pupils in the teachers' samples for this study had been administered either the Metropolitan or Stanford Achievement Tests. From this large number, only 17 teachers' samples had to be excluded: seven because data information were provided for pupils in grade one or beyond grade eight for which expected gains were not published by the MAT Gains Tables; four because of too short

a time interval between pre- and post-test administrations; and three cases each of an inappropriate test level administered for grade placement and too few pupils sampled.

Fourteen teachers' sample groups of pupils had to be discarded because reading and math test information was incomplete (e.g. data regarding subtest, level, form of the test administered, pretest scores not reported).

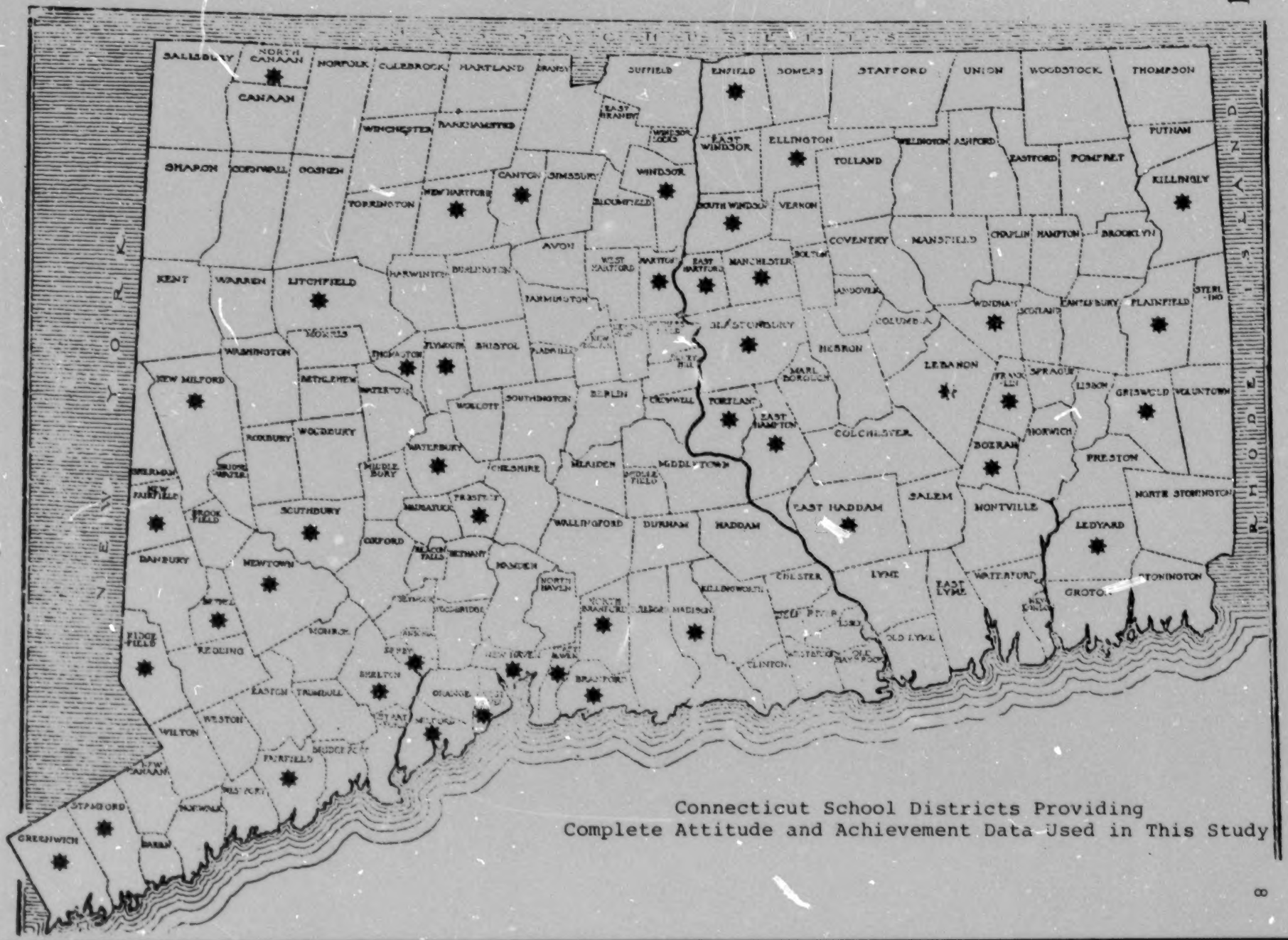
C. Incomplete Attitude Data

Sixteen teachers' samples did not report School Sentiment Index scores for individual pupils and, since a combination of attitude and achievement data were being analyzed, these samples could not be included.

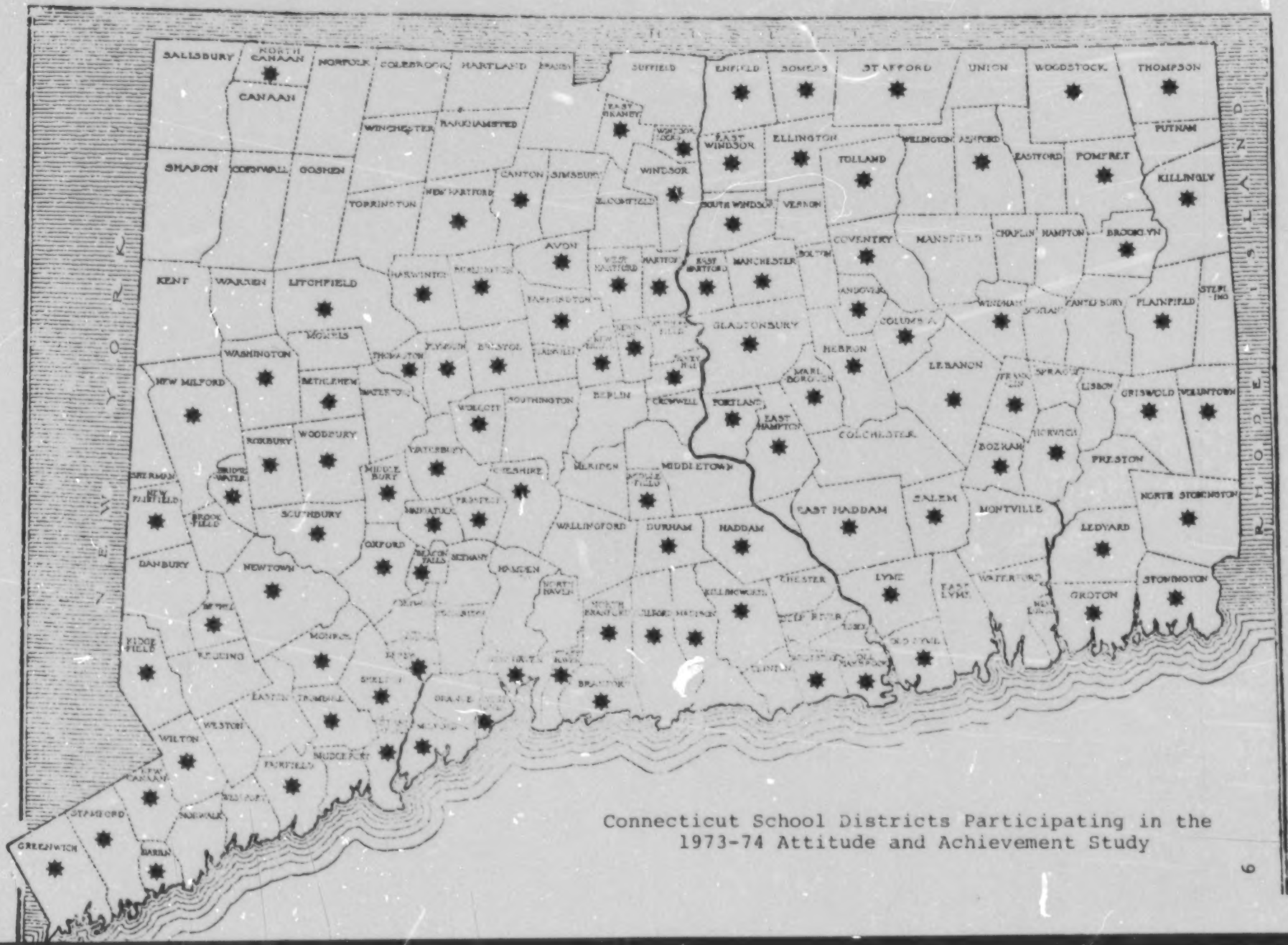
The two Connecticut maps on the following pages indicate the towns participating in the study. The first map includes towns for whom all necessary data were available. The second map includes towns supplying attitudinal data to aid in the development of statewide grade norms for the School Sentiment Index as well as towns which supplied data but, for any of the reasons cited above, could not be used in the final study sample.

Evaluation Procedures

An analysis of all available attitude data revealed no significant difference in pupil responses when children were grouped according to urban, suburban, and rural classifications with the exception of grade 4. Therefore, statewide norms for the attitude measure were established on the mean for the total sample by grade level for all grades except grade 4 where the mean scores by region classification were used. It



Connecticut School Districts Providing
Complete Attitude and Achievement Data Used in This Study



Connecticut School Districts Participating in the
1973-74 Attitude and Achievement Study

was then determined whether or not each child responded as positively in attitude as the norm for the grade level.

Pretest stanines and standard score gains in achievement were computed for each pupil. Pupil achievement gain scores were then compared with the expected gains established when grade level and pretest achievement were controlled to see whether expected gains were met.

The number of pupils in each teacher's sample meeting the expected gains in attitude and in achievement was tabulated, and from this tabulation, the proportion of pupils meeting the expected attitude and achievement gains in each group was computed. In addition, the mean achievement standard score gain was figured for each teacher's sample. Also, a mean standard score gain from the entire sample of 111 teachers was computed. Subsequently, attitude and achievement data were analyzed in relationship to each other and in relationship to compensatory education program variables and school district variables.

The following definitions are offered to clarify some of the important terms used in this study as well as to describe a number of compensatory education program and school district variables.

Definition of Terms

1. Pretest standard score: The MAT reading or math pretest standard score for an individual pupil. (Anchor Test Study Equivalency Tables allowed pretest raw scores from eight widely used reading tests for pupils in grades 4-6 to be equated with 1970 Metropolitan Reading Test scores.)

2. Post-test standard score: The MAT reading or math post-test standard score for an individual pupil.

3. Standard score gain: The MAT reading or math post-test standard score minus the pretest standard score for an individual pupil.

4. Attitude score: The number of responses indicating a positive attitude toward school for an individual pupil on the appropriate level of the School Sentiment Index.

5. Interval between testing: The interval of time in months between the pre- and post-test administrations of the reading or math subtests to the pupil.

6. Sampled group attitude: The proportion of a teacher's sampled group of pupils responding as positively in attitude toward school as the norm for the grade level established in the 1974 administration of the School Sentiment Index. Norms were derived by computing the mean raw score on the appropriate level of the instrument grouped according to grade level and urban, suburban, and rural classifications.

7. Sampled group reading and/or math achievement gains: The proportion of a teacher's sampled group of pupils meeting the expected gains in standard score units established by the Metropolitan Achievement Test Gains Expectation Tables for Grades Two through Eight. (See Appendix C.) These expected gains were developed according to subtest, grade level of the pupil, and pre-test stanine. (Pupils whose pretest scores fell in stanines 1-3 comprised

the low stanine group, pretest stanines 4-6 defined the average group and stanines 7-9 the high stanine group.)

8. Combined attitude and achievement: The average proportion derived from a combination of the proportions discussed in "6" and "7" above. The two variables were combined to investigate whether attitude and achievement measures when grouped together can be used to differentiate the more effective from the less effective reading and math compensatory education programs in Connecticut.

9. Sampled group pretest stanine: The sum of the reading or math pretest stanines for a teacher's sampled group of pupils divided by the number of pupils for whom complete study information was available multiplied by ten.

10. Mean standard score gain: The sum of the reading or math standard score gains from pretest to post-test for a teacher's sampled group of pupils divided by the number of pupils in the sample for whom complete study information was available multiplied by ten.

11. Pupil-Teacher ratio: The total number of pupils receiving instruction from the compensatory-supported staff member during the 1973-74 school year. This number is considered one measure of the concentration of effort of a school district compensatory program.

12. Average instructional hours: The total number of hours of compensatory instruction received by one pupil during

the 1973-74 school year from a compensatory-supported staff member.

13. Program cost: The cost per pupil to replicate a compensatory staff member's effort. This includes the staff member's salary, the cost of the instructional supplies and equipment used during 1973-74, travel and transportation expenses and the supervisory and staff-training costs for the compensatory effort. This is considered to be still another measure of the concentration of effort of a school district's compensatory program.

14. School enrollment: The number of children enrolled in the compensatory staff member's school reported as of October 1, 1973 in the Title I Application for Grant submitted by the school district.

15. School ADC: The proportion of Aid for Dependent Children cases of the October, 1973 enrollment as reported in the 1974 Title I Application for Grant submitted by the school district.

16. School district enrollment: The number of children attending schools who reside in the school district as reported in the 1974 Title I Application for Grant submitted by the school district.

17. District per pupil expenditure: The 1972-73 operating expenses per pupil for a school district as reported in the January, 1974 Local Public School Expenses and State Aid in Connecticut published by the Connecticut Public Expenditure Council, Inc.

18. District effort: A measure of the willingness of a town to tax itself to pay for education. This is indicated as a ratio of the total local funds expended for education to the total resources of the town that are taxed. The figures used in this study were taken from Ability, Effort, and Total Expenditure Per Pupil Data for the State of Connecticut for the Year 1971-72 published by the Educational Resources and Development Center, School of Education, University of Connecticut. The five place decimal reported in this source was multiplied by 100,000 for use in data analysis.

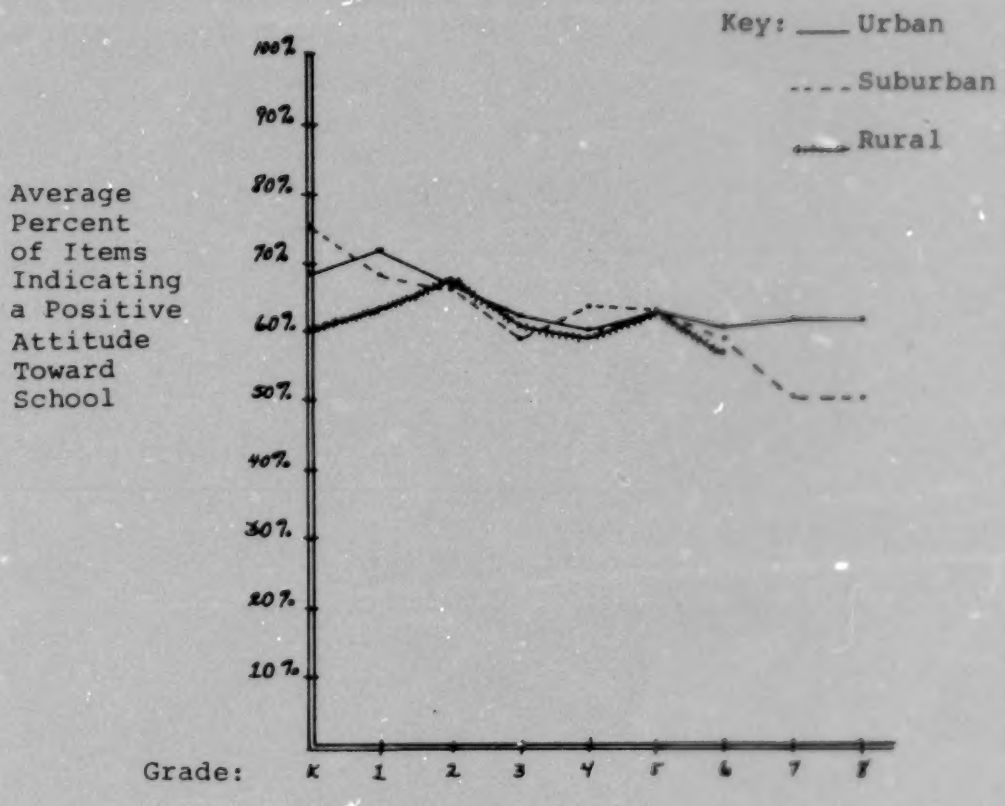
The results reported in the next four sections primarily take the form of tables listing the outcomes of statistical analyses together with brief descriptions. Interpretations and conclusions are discussed in more detail in the final two sections of this report.

II. ATTITUDE RESPONSES OF PUPILS

Grade Level and Regional Similarities

Pupil attitudes toward school were similar in urban, suburban, and rural settings, but tended to become slightly less positive as pupils progress upwards through the grades. This is illustrated by the following figure.

SCHOOL SENTIMENT INDEX SCORES
BY GRADE LEVEL AND REGION



The table on the following page describes pupil responses to the School Sentiment Index. The table presents the mean ($\bar{x}$), standard deviation (S.D.) and number of pupils (n)

for each grade level according to urban, suburban, and rural classifications. Also presented are means, standard deviations and numbers of pupils for the entire sample by grade level.

SCHOOL SENTIMENT INDEX SCORES
BY GRADE LEVEL AND REGION

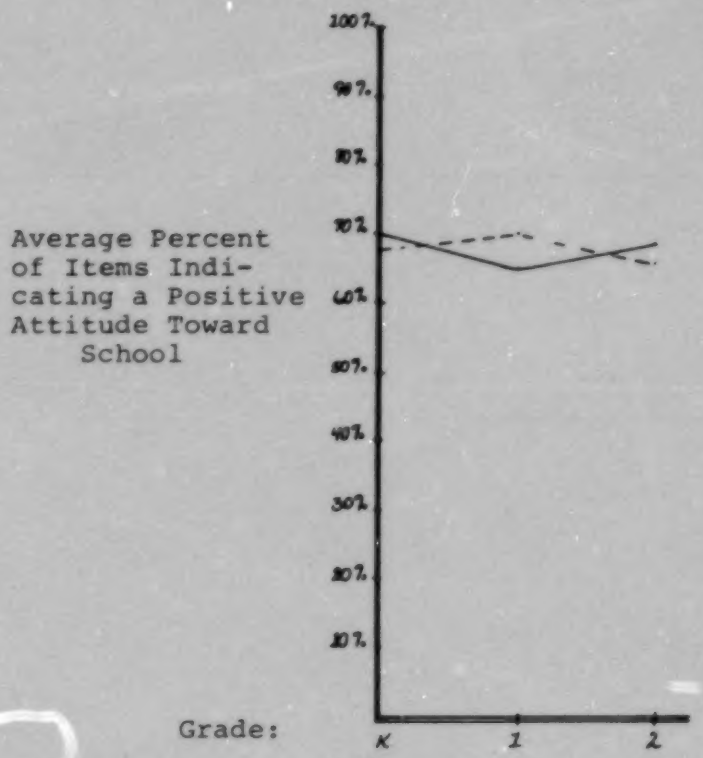
	Primary Level			Intermediate Level					Secondary Level*			
Gr.	K	1	2	3	4	5	6	7	8	9	10	11	12
						Urban							
n	137	235	337	74	145	145	104	56	25				
$\bar{x}$	20.5	21.5	19.9	50.1	49.0	50.7	48.6	49.3	49.2				
SD	3.8	4.2	4.7	12.5	13.2	12.6	13.2	11.8	11.1				
						Suburban							
n	13	153	389	264	266	240	195	29	46				
$\bar{x}$	22.6	20.5	19.8	47.1	52.1	50.8	47.4	40.5	40.2				
SD	4.7	5.2	5.4	18.0	13.8	13.6	14.4	14.5	15.7				
						Rural							
n	12	27	66	46	77	67	46	--	--				
$\bar{x}$	17.9	18.8	20.2	49.1	47.4	51.4	45.9	--	--				
SD	3.7	3.3	4.3	16.2	13.4	15.4	11.9	--	--				
						Total Sample							
n	162	415	792	384	488	452	345	85	71	24	22	16	18
$\bar{x}$	20.5	20.9	19.9	47.9	50.5	50.9	47.6	44.1	42.5	214.5	206.3	212.0	204.7
SD	4.0	4.6	5.0	16.9	13.6	13.6	13.7	12.9	14.3	24.9	14.2	27.6	33.3

*Sample sizes too small to be grouped according to regional classification or to be considered accurate.

Stability of Pupil Attitudes

Pupils responding to the 1974 administration of the Primary Level of the School Sentiment Index expressed similar attitudes toward school to those expressed by pupils in the 1973 administration of the same level of the instrument. This is illustrated by the following figure and table which presents for both administrations (1973 and 1974) the mean ($\bar{x}$), standard deviation (S.D.) and number of pupils(n) by grade level.

SCHOOL SENTIMENT INDEX SCORES
BY GRADE LEVEL AND TEST ADMINISTRATION



1974 Administration:

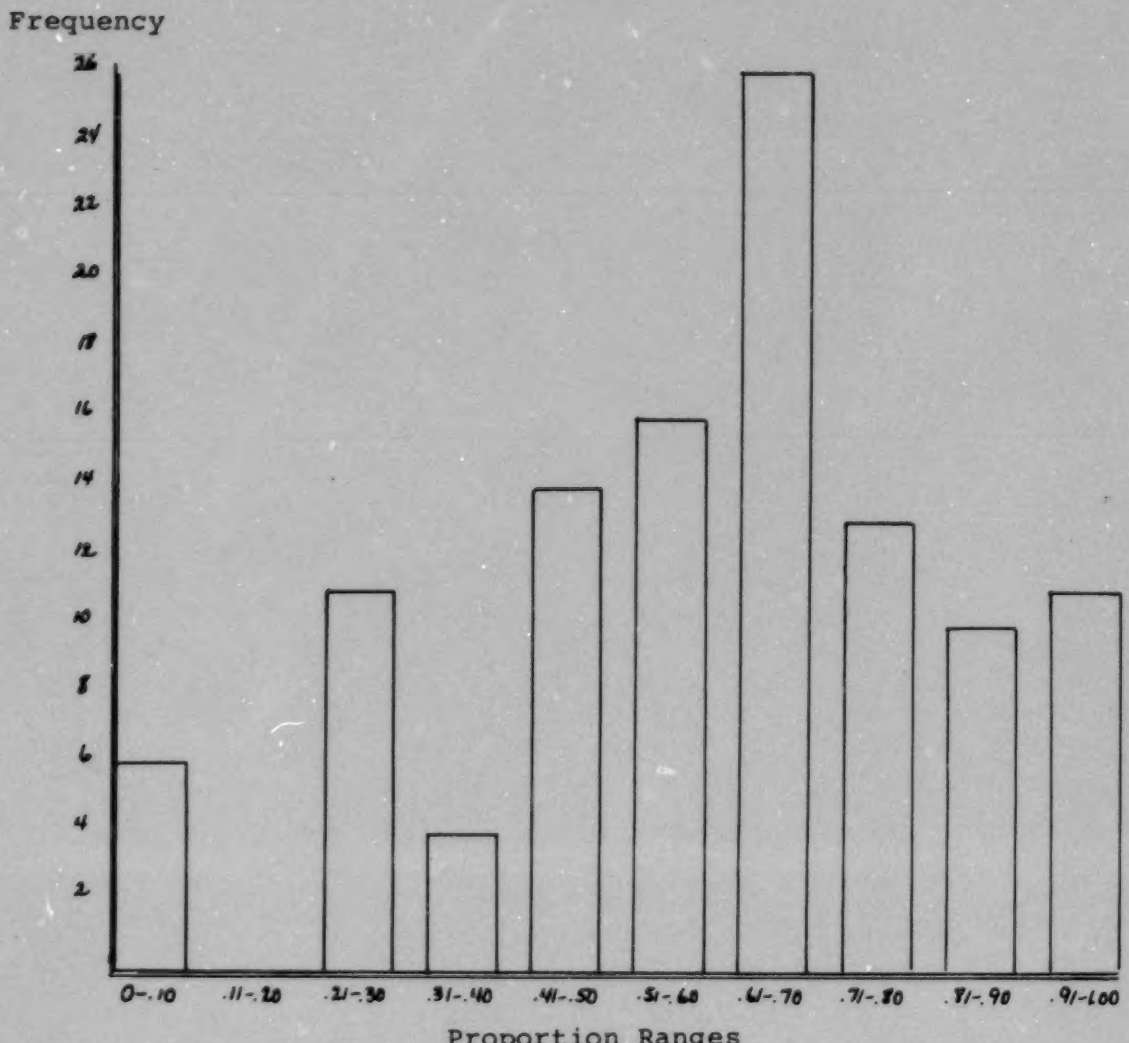
Gr.	K	1	2
n	162	415	792
$\bar{x}$	20.5	20.9	19.9
SD	4.0	4.6	5.0

1973 Administration:

Gr.	K	1	2
n	112	160	314
$\bar{x}$	21.0	19.4	20.5
SD	3.4	5.0	4.8

Variation in Attitude Among Groups of Children

A proportion was calculated of the number of pupils in each teacher's sample group meeting the statewide grade level norms established for the spring 1974 administration of the School Sentiment Index. As illustrated below, the 111 proportions were distributed in a fairly normal pattern and indicate a good spread of attitude data. These are both important factors if this instrument is to be used as an evaluation measure.



To investigate further the association of attitude with other pupil information collected in the study, product-moment correlations of individual pupil data at selected grade levels were performed. Standard score reading and/or math achievement at pretesting, standard score reading and/or math achievement at post-testing, and the standard score reading and/or math gain from pre- to post-testing were compared to the pupil's total score on the School Sentiment Index. The pupil data were grouped for the correlation analysis so that differences of grade level and differences of reading and/or math attainment at pretesting would only minimally affect the results obtained.

The findings indicate a low and nonsignificant association between pupil attitude and achievement test results.

Correlation Coefficients

	Pupils in the sample	Attitude and Achievement Pretest	Attitude and Achievement Post-test	Attitude and Achievement Gain
Gr. 2	Pupils Starting with Low Reading/Math Achievement:			
	187	-.02	.06	.08
Gr. 2	Pupils Starting with Average Reading/Math Achievement:			
	192	-.02	-.08	-.07
Gr. 4	Pupils Starting with Low Reading/Math Achievement:			
	163	-.01	-.02	-.01
Gr. 4	Pupils Starting with Average Reading/Math Achievement:			
	97	.13	.00	-.04
Gr. 6	Pupils Starting with Low Reading/Math Achievement:			
	85	-.11	-.06	-.02
Gr. 6	Pupils Starting with Average Reading/Math Achievement:			
	110	-.11	.05	.13

Relationship of Attitude to Other Factors

A proportion was calculated of the number of pupils in each teacher's sample meeting the statewide grade level norms established for the spring 1974 administration of the School Sentiment Index. One hundred and eleven teachers submitted complete information for this analysis.

The proportion of a teacher's pupil sample meeting the mean expected positive attitude toward school did not relate significantly ($p < .05$) to any of the following product-moment correlations:

1. Percentage (%) gain (.06): The proportion of a teacher's pupil sample meeting the expected standard score reading and/or math gain when pretest and grade level differences were partially controlled.

2. Pupil-Teacher ratio (.14): The ratio of the total number of pupils helped during the year to the teacher or compensatory team providing the help.

3. Instructional hours (-.06): The total number of supplementary hours of compensatory help given per year per pupil.

4. Program cost (.05): The cost of the teacher's compensatory efforts over the course of the year.

5. Pretest stanine (-.05): The mean pretest reading and/or math attainment of the teacher's pupil sample.

6. Mean standard score gain (.01): The mean standard score gain in reading and/or math for the teacher's pupil sample.

7. School enrollment (.06): The number of pupils enrolled in the school where the teacher provided the compensatory help.

8. School ADC (.12): The proportion of Aid for Dependent Children cases per school enrollment.

The 111 teachers submitting complete data represented 42 school districts. To correlate the attitude data with

school district variables, the 111 cases were reduced to 42 cases by taking a mean of the teacher's data where more than one teacher submitted data from the same school district.

The proportion of a teacher's pupil sample meeting the expected positive attitude toward school did not relate significantly to any of the following school district variables in product-moment correlations:

9. District population (.09): The school population in the town.

10. District per pupil expenditure (.08): The per pupil expenditure for education in the school district.

11. District effort (.21): The willingness of a district to tax itself to pay for education.

III. READING AND MATH GAINS OF PUPILS

Achievement Test Controls

The achievement test data analyzed in this study were subject to the following controls:

1. Scores were equated with a single achievement test. Test scores of pupils were from Reading or Math Computations subtests of the 1970 Metropolitan Achievement Tests or from other standardized instruments having comparable subtests and for which tables were available for conversion to the Metropolitan. In one exception, the Total Reading score was used instead of the Reading subtest of the Metropolitan for 10 pupil samples from a single school district.

2. The appropriate level of the test was administered. The test scores used in the analysis were from the level of the test appropriate for the pupil's grade level placement or not more than one level lower in cases where pupils had severe reading and/or math deficits. According to test publishers, this is permissable where score interpretation is in standard score units.

3. Equal-interval score units were employed. Reading and math raw scores of pupils were converted to standard score and stanine units which are more accurate for research work. Other derived scores distort pupil test results especially when most of the scores fall at the lower end of the scale as is the case for most pupils receiving compensatory education assistance.

4. Pretest differences were considered.

Pupil skills in reading and math achievement vary extensively. If the pupil pretests in a high stanine in reading and/or math achievement, the gain pattern that follows is typically minimal. If the pupil pretests with a considerable deficit in reading and/or math (in a low stanine) the gain pattern is much different. To partially control for the different gain patterns, in this study pupils scoring at pretest in the different stanine levels were separated into three categories: those who began the year with low pretest achievement (stanines 1-3), average pretest achievement (stanines 4-6), and high pretest achievement (stanines 7-9). This allowed for the grouping of the test scores of pupils having similar achievement skills at the beginning of the year.

5. Grade level differences were taken into account.

Grade level in school as well as pretest achievement are both important factors needed in the interpretation of standard score gain patterns. Given these two factors, the MAT Gains Tables (see Appendix C) indicate the standard score gain in reading or math that can be expected.

Standard Score Gains in Reading

The following table and figure present the reading gains in standard score units of sampled Connecticut compensatory education pupils subject to all the above controls compared to the expectations of the MAT Gains Tables. Reading gains made by sampled Connecticut pupils

grade by grade were generally greater than those patterns reported in the MAT Gains Tables for a large national sample of pupils. However, a longer interval of time occurred between pre- and post-testing for Connecticut pupils. Hence, Connecticut gains are fairly comparable to those of the larger national sample.

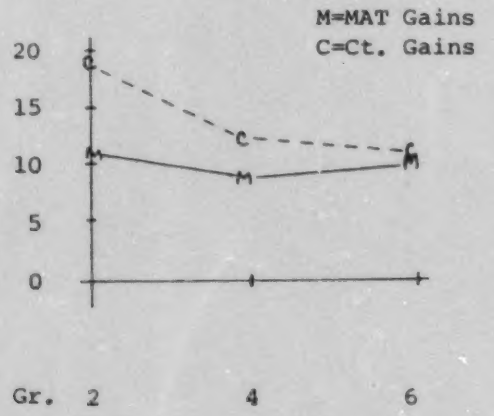
STANDARD SCORE GAINS IN READING

Gr. Lvl.	Standard Score Gains for Pupils Having Low Pretest Scores (Stanines 1-3)				
	CONNECTICUT GAINS			MAT EXPECTED GAINS	
	N	S.S. Gain	S.D.	S.S. Gain	S.D.
2	187	19.0	12.2	11.3	9.9
4	163	12.4	10.3	8.5	15.5
6	85	11.4	8.8	11.2	17.5

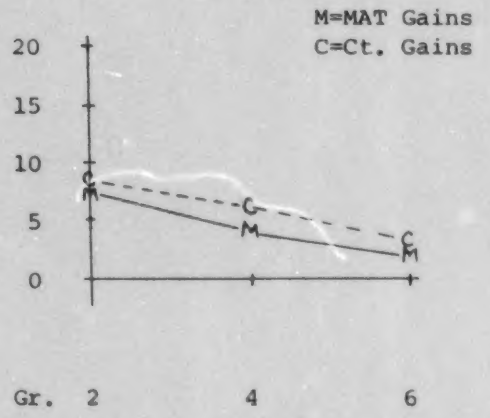
Standard Score Gains for Pupils Having Average Pretest Scores (Stanines 4-6)				
CONNECTICUT GAINS			MAT EXPECTED GAINS	
N	S.S. Gain	S.D.	S.S. Gain	S.D.
192	8.7	7.6	7.8	6.8
97	6.3	7.9	4.5	7.9
110	3.0	7.8	2.4	6.2

Standard Score Gains for Pupils Having High Pretest Scores (Stanines 7-9)				
CONNECTICUT GAINS			MAT EXPECTED GAINS	
N	S.S. Gain	S.D.	S.S. Gain	S.D.
No Connecticut compensatory program pupils had high pretest scores.			3.4	9.8
			2.1	8.3
			-3.4	8.1

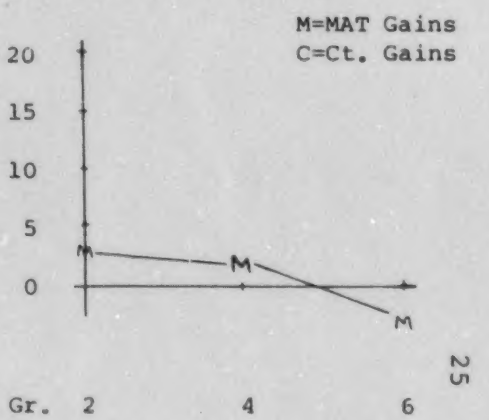
Standard Score Gain
for Pupils with Low Pretest Scores



Standard Score Gain
for Pupils with Average Pretest Scores

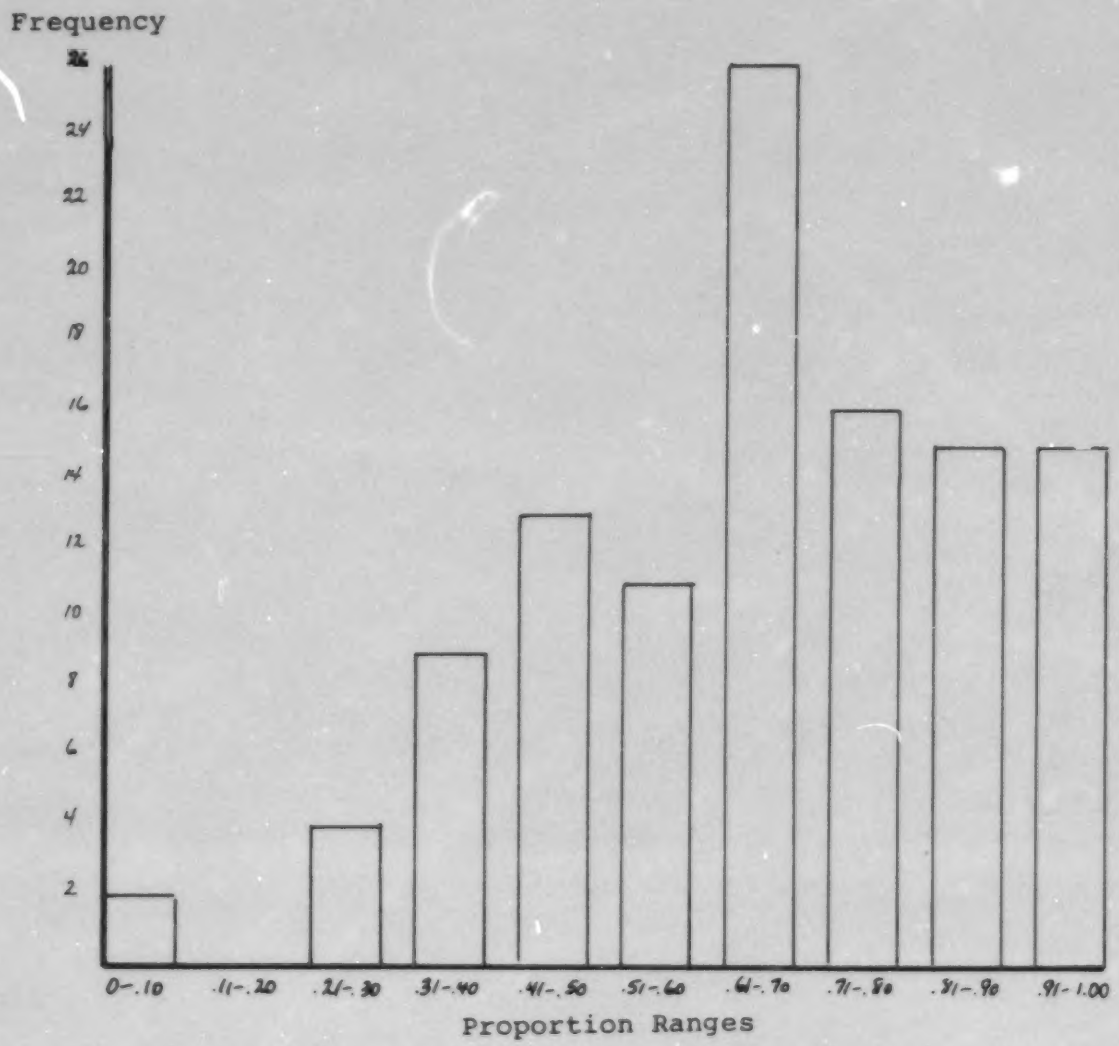


Standard Score Gain
for Pupils with High Pretest Scores



Variation in Achievement Among Groups of Pupils

A proportion was calculated of the number of pupils in each teacher's sample group meeting the MAT Gains Tables' expected standard score gain. As illustrated below, the 111 proportions present a fair spread of achievement gain data with proportions clustering to some extent at the upper end of the scale. This suggests that the method employed in treating achievement test gain data is minimally adequate as an evaluation measure.



Relationship of Achievement Test Gains to Other Factors

A proportion was calculated of the number of pupils in each teacher's sample meeting the MAT Gains Tables expected standard score gain. One hundred and eleven teachers submitted complete information for this analysis.

The proportion of a teacher's pupil sample meeting the expected standard score gain related significantly ($p < .05$)* to three of the eight study variables in product-moment correlations.

1. Percentage (%) attitude (.06): The proportion of a teacher's pupil sample meeting the mean expected statewide grade level norms established for the spring 1974 administration of the School Sentiment Index.

2. Pupil-Teacher ratio (-.12): The ratio of the total number of pupils helped during the year to the teacher or compensatory team providing the help.

3. Instructional hours (.05): The total number of supplementary hours of compensatory help given per year per pupil.

4. Program cost (.06): The cost of the teacher's compensatory efforts over the course of the year.

5. Pretest stanine (-.32*): The mean pretest reading and/or math attainment of the teacher's pupil sample.

6. Mean standard score gain (.70*): The mean standard score gain in reading and/or math for the teacher's pupil sample without controlling for either grade level or achievement differences at pretesting.

7. School enrollment (-.08): The number of pupils enrolled in the school where the teacher provided the compensatory help.

8. School ADC (-.29*): The proportion of Aid for Dependent Children cases per school enrollment.

The proportion of a teacher's pupil sample meeting achievement gain expectations, then, related significantly

to their pretest status, their mean standard score achievement gain, and the proportion of poor children in the schools.

The 111 teachers submitting complete data represented 42 school districts. To correlate the attitude data with school district variables, the 111 cases were reduced to 42 cases by taking a mean of the teachers' data where more than one teacher submitted data from the same school district. Variables were standardized.

The proportion of a teacher's pupil sample who made the expected achievement gain did not relate significantly to any of the following school district variables in product-moment correlations.

9. District population (-.01): The school population in the town.

10. District per pupil expenditure (.01): The per pupil expenditure for education in the school district.

11. District effort (.20): The willingness of a district to tax itself to pay for education.

Since the "proportion of a teacher's pupil sample making the expected achievement gains" correlated significantly with several variables in the study, a multiple regression analysis was made of eleven other standardized variables to determine the significant predictors. Four important predictors are identified below. The eleven variables together accounted for 66 percent of the variance in "the proportion of a teacher's pupil sample making the expected achievement gains."

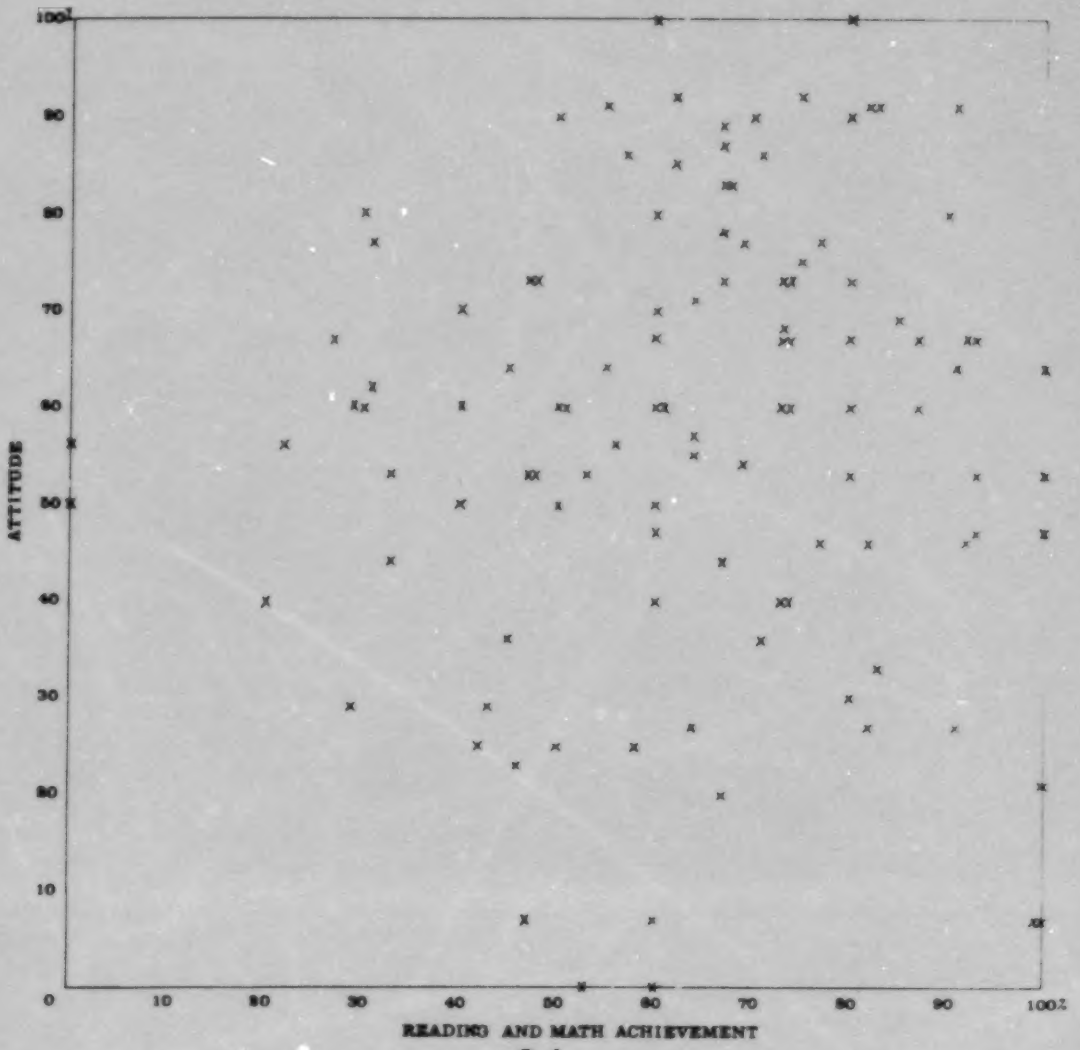
MULTIPLE REGRESSION ANALYSIS OF THIRTEEN VARIABLES
HOLDING "% GAIN" AS THE DEPENDENT VARIABLE

Dependent Variable	Independent Variables	Significant Predictors	Beta Coefficients	F Value	Degrees of Freedom
% Gain	All other variables except "attitude plus gain"	1. Mean standard score gain	1.05	8.294	10/31
		2. Mean pretest stanine	.49		
		3. School ADC	-.30		
		4. District school population	.23		

IV. COMBINING ATTITUDE AND ACHIEVEMENT OF PUPILS

Lack of Relationship Between Attitude and Achievement

When the proportion of a teacher's sample group of pupils meeting the expected achievement gains was plotted horizontally and the proportion of the teacher's sample group of pupils meeting the attitude grade norms was plotted vertically, a wide scatter of results for the 111 groups of pupils was obtained indicating an apparent lack of relationship between the paired scores.



Combined Attitude and Achievement Compared to Attitude and Achievement Separately

Attitude and achievement measures combined for a teacher's group of pupils did not present any stronger relationships with the ten program and school variables than did attitude or achievement when treated separately with one minor exception. (For Program Cost, the correlation coefficient for Attitude Plus Gain was .08 as compared with .05 for Attitude alone and .06 for Gain alone.)

Intercorrelation of Ten Study Variables

(n=111)

Program and School Variables	% Attitude	% Gain	Attitude Plus Gain
Pupil-staff ratio	.14	-.12	.02
Instructional hours	-.06	.05	-.01
Program cost	.05	.06	.08
Mean pretest reading attainment	-.05	-.32*	-.25*
Mean standard score reading gain	.01	.70*	.47*
School enrollment	.06	-.08	-.02
School ADC	.12	-.29*	-.11

*p< .05

Similarly, attitude and achievement measures combined for a teacher's sample group of pupils did not present any stronger relationships with other information collected in the study than did attitude or achievement when treated separately with two minor exceptions. (Mean pretest reading attainment and District willingness to tax for education)

Intercorrelation of Thirteen Standardized Variables

(n=42)

Program and School Variables	% Attitude	% Gain	Attitude Plus Gain
Pupil-staff ratio	.09	-.09	.01
Instructional hours	-.08	-.01	-.05
Program cost	.16	.05	.14
Mean pretest reading attainment	-.17	-.12	-.20
Mean standard score reading gain	.13	.74*	.55*
School enrollment	.04	-.09	-.03
School ADC	.10	-.15	-.06
District school population	.09	-.01	.03
District education expenditure	.08	.01	.05
District willingness to tax for education	.21	.20	.27

*$p < .05$

Supervisory Judgments of Pupils' Attitude and Achievement

In eight school districts where three or more compensatory staff members submitted attitude and achievement data for pupils, supervisory judgments were requested.

Supervisors who had visited their program's compensatory education settings regularly and had observed pupils receiving assistance were asked to rate each group of pupils with every other group of pupils for whom data sheets were submitted. Using the method of paired comparisons, supervisors were asked to rate groups of pupils in terms of their showing more or less progress in reading or math skills together with having more or less positive attitudes toward school.

Eight supervisors of 49 compensatory staff members submitting data made judgments which related significantly with achievement, but not with attitude or attitude and achievement measures combined.

Pearson Correlation Coefficients

n=49)

Attitude	-.06
Achievement	.29*
Attitude and Achievement	.15

*p < .05

V. ADDITIONAL FINDINGS

Pretest, Post-test, and Gain Score Relationships

The mean pretest and post-test standard scores for pupils receiving compensatory help from selected grade levels as well as gains are presented below. The mean scores indicate that the lower the grade level the greater the gain score for both the low (stanines 1-3) and average (stanines 4-6) pretest achievement groupings. At each grade level, pupils with low pretest achievement scores make better gains from pre- to post-testing than do pupils with average scores at pretesting. This is as expected according to the test measurement theory, "regression toward the mean."

Pre- and Post-test Standard Scores

Category	N	Mean	S.D.	Mean	S.D.	Mean	S.D.
Gr. 2 Low	187	28.0	6.9	45.6	9.1	19.0	12.2
Gr. 2 Average	192	40.6	4.6	49.4	8.5	8.7	7.6
Gr. 4 Low	163	48.5	8.0	60.9	9.1	12.4	10.3
Gr. 4 Average	97	61.9	4.7	68.4	8.9	6.3	7.9
Gr. 6 Low	85	62.3	8.4	72.9	12.0	11.4	8.8
Gr. 6 Average	110	77.9	5.3	80.7	8.7	3.0	7.8

Test measurement theory indicates that there should be a high relationship between pretest and post-test achievement scores of pupils. As presented in the following table, low but

significant relationships were found for all groups with the exception of grade two where pretest and post-test scores for low pretest achievers did not relate at all.

Correlation Coefficients

Category	N	Pre- to Post-test	Pretest to Gain	Post-test to Gain
Gr. 2 Low	187	-.03*	-.58	.75
Gr. 2 Average	192	.45	-.09*	.84
Gr. 4 Low	163	.29	-.52	.67
Gr. 4 Average	97	.44	-.13*	.81
Gr. 6 Low	85	.61	-.08*	.69
Gr. 6 Average	110	.49	-.12*	.79

*Not statistically significant

Scatter diagrams showing the results for each of the above pre- to post-test groups can be found in Appendix D of this report.

Mean Standard Score Gains for Groups of Children

Concerted efforts were made to control achievement test data as much as possible in this study. For example, the proportion of a teacher's pupils making expected achievement gains was computed only after subtest, grade level, and pretest differences among pupils were controlled. The "proportion of a teacher's sample group of pupils making the expected gains" was the principal method for using achievement test information in this study.

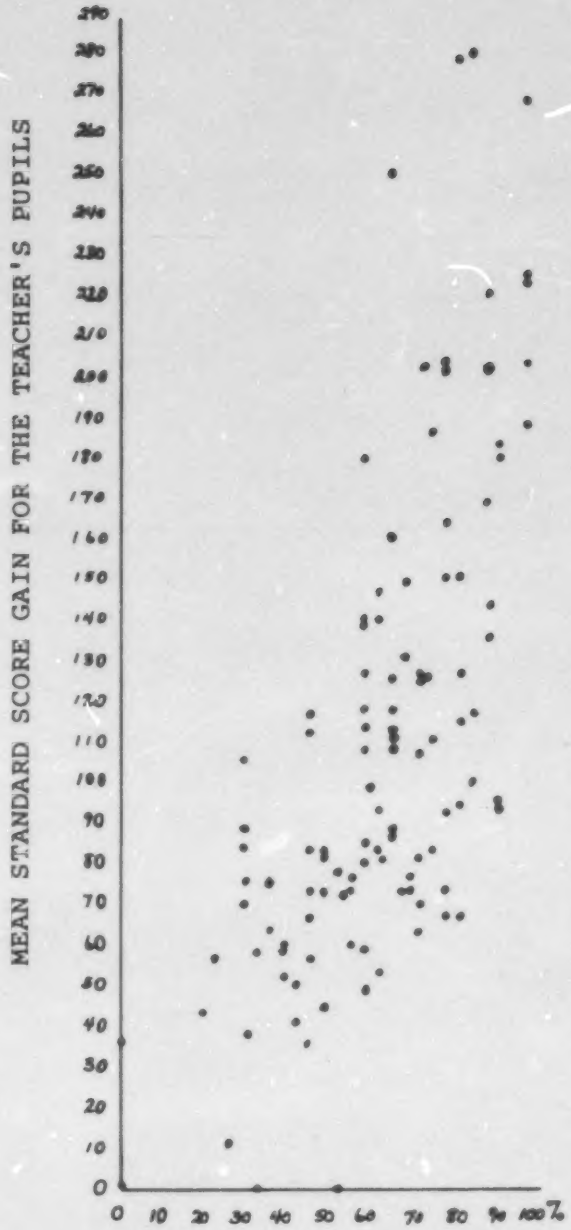
An alternative method for treating achievement data is the use of a mean standard score gain computed for a teacher's sample group of pupils. However, the mean standard score gain does not control for subtest, grade level or pretest differences among pupils while a compensatory staff member's group usually consists of pupils across several grade levels with varying degrees of difficulties in reading or math skills.

Nevertheless, the mean standard score gain for a teacher's group of pupils did have a significantly important relationship to compensatory program cost while the "proportion of a teacher's sample group of pupils making expected gains" did not. In addition, as shown in the scatter diagram on the following page, there tended to be high correlation (.70) between the two methods of treating achievement test information for groups of children.

Compensatory Program Cost

Program costs per pupil for compensatory staff efforts related significantly to four out of the nine program and school district variables for which comparisons were made.

As anticipated, increasing the amount of services leads to higher program costs. Not expected, however, was the finding that the higher program costs associated significantly with pupils having the most severe learning problems. Pupils with the most severe learning problems need more individual attention which costs more. This could explain


MEAN STANDARD SCORE GAIN FOR THE TEACHER'S PUPILS
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
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210
220
230
240
250
260
270
280
290
0 10 20 30 40 50 60 70 80 90 100%
PROPORTION OF PUPILS MAKING
EXPECTED ACHIEVEMENT GAINS

the important association between test gains and program costs.

There was an important negative relationship between program cost and school enrollment which seems to be best explained by noting the high positive correlation between pupil-compensatory staff ratio and school enrollment (.45). Program per pupil costs are lower in schools having high enrollments due to the school's tendency to service a greater proportion of their pupils.

Correlation Coefficients of Program Cost and Nine Other Variables

(n=111)

Proportion of pupils responding positively in attitude	.05
Proportion of pupils gaining expected achievement	.06
Mean proportion of attitude plus test gain	.08
Compensatory program pupil-staff ratio	-.15
Compensatory hours of help per year per pupil	.27*
Mean pretest achievement for a teacher's pupils	-.22*
Mean standard score gain for a teacher's pupils	.23*
School enrollment where compensatory help was given	-.21*
Proportion of ADC children per school enrollment	.12

*$p < .05$

When compensatory program cost per pupil was compared with 12 other variables after standardization, the negative association between program cost and the mean pretest achievement of pupils increased. Other previously mentioned relationships of importance became non-significant, due in part to the decreased sample size.

Correlation Coefficients of Program Cost and 12 Other Variables

(n=42)

Proportion of pupils responding positively in attitude	.16
Proportion of pupils gaining expected achievement	.05
Mean proportion of attitudes plus test gain	.14
Compensatory program pupil-staff ratio	-.12
Compensatory hours of help per year per pupil	.11
Mean pretest achievement for a teacher's pupils	-.40*
Mean standard score gain for a teacher's pupils	.28
School enrollment where compensatory help was given	-.25
Proportion of ADC children per school enrollment	.23
School population for the district	.30
Expenditures for education in the district	.29
The willingness of a district to tax itself for education	.05

*$p < .05$

Other Measures of Compensatory Program Concentration

Two additional measures of concentration of compensatory program services, other than the cost of compensatory programs, are pupil-teacher ratio and the number of instructional hours per year per pupil. The intercorrelation of these two variables with eight other variables is presented below.

Pupil-teacher ratio relates significantly with school enrollment. Pupils in schools having lower enrollments tend to require a greater concentration of compensatory education services.

As expected, instructional hours relates significantly to program cost. The more hours of services provided, the higher the cost of the compensatory program.

Correlation Coefficients

(n=111)

Variable	P-T Ratio	Hours
Proportion of pupils responding positively in attitude	.14	-.06
Proportion of pupils gaining expected achievement	-.12	.05
Mean proportion of attitude plus test gain	.02	-.01
Compensatory program pupil-staff ratio	---	-.51*
Compensatory hours of help per year per pupil	-.51*	---
Compensatory program cost per pupil	-.15	.27*
Mean pretest achievement for a teacher's pupils	.05	.00
Mean standard score gain for a teacher's pupils	-.05	.02
School enrollment where compensatory help was given	.45*	-.16
Proportion of ADC children per school enrollment	.08	.04

*p < .05

When the two measures of concentration were compared with other variables after standardization, only school enrollment related significantly to pupil-teacher ratio besides the significant correlation of the two previously mentioned variables one to the other.

Correlation Coefficients

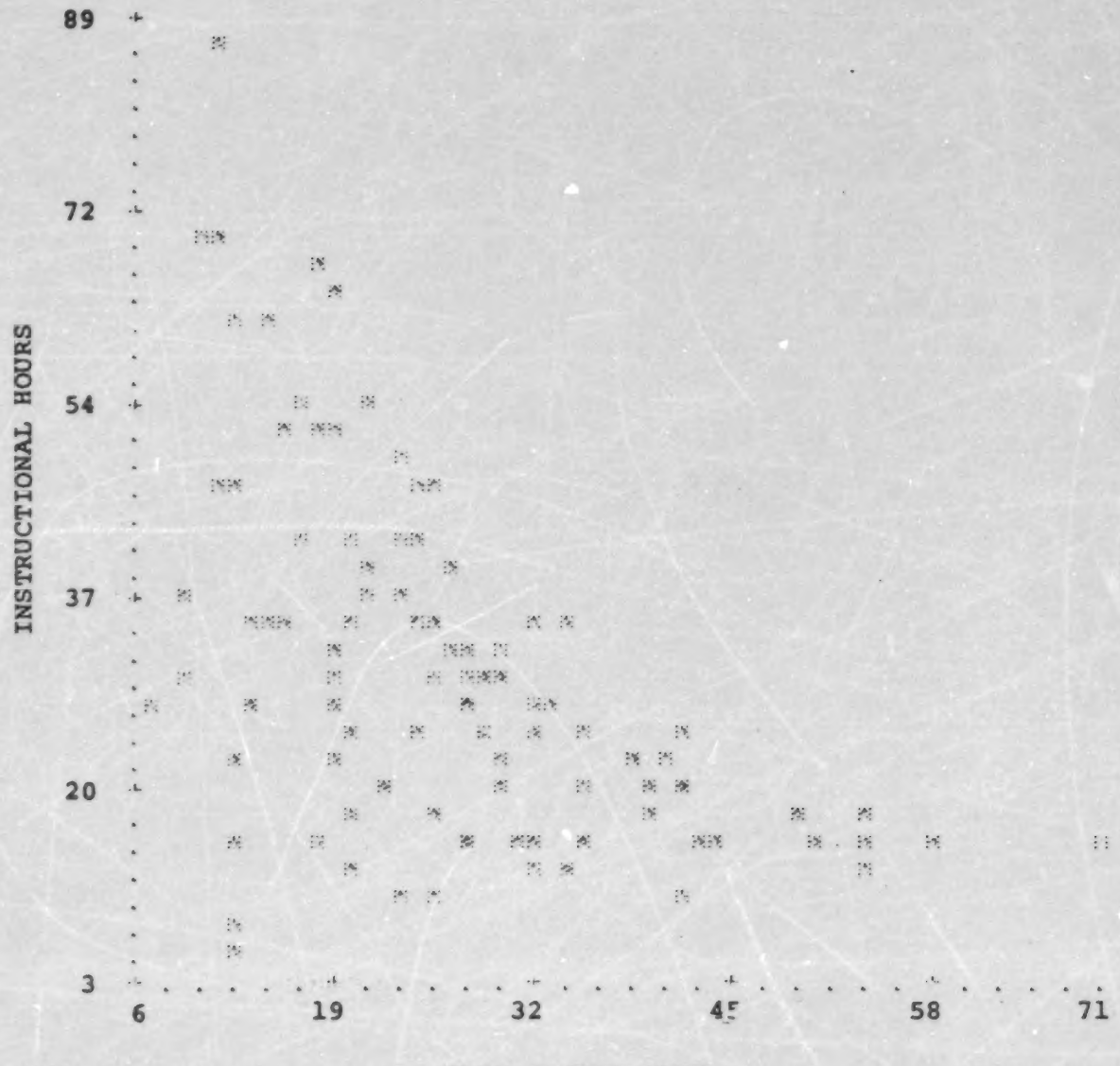
(n=42)

Variable	P-T Ratio	Hours
Proportion of pupils responding positively in attitude	.09	-.08
Proportion of pupils gaining expected achievement	-.09	-.01
Mean proportion of attitude plus test gain	.01	-.05
Compensatory program pupil-staff ratio	---	-.68*
Compensatory hours of help per year per pupil	-.68*	---
Compensatory program cost per pupil	-.12	.11
Mean pretest achievement for the teacher's pupils	.08	-.04
Mean standard score gain for the teacher's pupils	-.02	-.07
School enrollment where compensatory help was given	.44*	-.16
Proportion of ADC children per school enrollment	.00	.07
District school population	.02	-.07
District per pupil expenditure for education	-.06	-.05
District willingness to tax itself for education	-.26	.29

*$p < .05$

Pupil-Teacher Ratio Relationship to Instructional Hours

The correlation analysis used to determine the relationship between pupil-teacher ratio and instructional hours was based on the two variables producing a straight line regression. The scatter diagram presented below shows that it is not a linear regression. Therefore, the -.68 coefficient obtained is a weaker value than might have been obtained had a curvilinear model been used.



School District Relationships of Importance

Several factors about school districts are important in regard to compensatory education concentration of services.

Children of the poor are in larger numbers in the larger school districts and it is in these school districts that the cost of educating children is higher. These important relationships can be noted in the correlation of the standardized variables of the study presented below.

It should also be noted that even though district school population and district expenditures are the highest correlates found in the study, none of the measures of concentrations of compensatory services relate significantly to them.

Throughout the study, district effort (the willingness of a school district to tax itself to pay for the education of its children) has shown a nonsignificant relationship with all other factors studied. However, in four instances of importance, district effort correlation coefficients were fairly high when other school district factors were almost zero. Comparing the three columns of district factors on the next page, it can be noted that the higher the district effort: (1) the higher the proportion of a teacher's pupils expressing more positive attitudes toward school; (2) the higher the proportion of a teacher's pupils achieving to the extent that they should in reading and/or math; (3) the lower the pupil-to-compensatory staff ratio; and (4) the higher the average hours of compensatory help per year per child.

Exactly the opposite is true in two important instances. Where the district school population and its educational expenditure relate well to compensatory program cost and the proportion of poor children in a school, there is almost zero correlation between these two factors and district effort.

The meaning of these relationships should be explored further, but with an increased school district sample size.

Correlation Coefficients
(n=42)

Variable	District Population	District Expenditure	District Effort
Proportion of pupils resonding positively in attitude	.09	.08	.21
Proportion of pupils gaining expected achievement	-.01	.01	.20
Mean proportion of attitude plus test gain	.03	.05	.27
Compensatory program pupil-staff ratio	.02	-.06	-.26
Compensatory hours of help per year per pupil	-.07	-.05	.29
Compensatory program cost per pupil	.30	.29	.05
Mean pretest achievement for a teacher's pupils	-.04	.01	.00
Mean standard score gain for a teacher's pupils	.10	.10	.25

Variable	District Population	District Expenditure	District Effort
School enrollment where compensatory help given	-.08	-.22	-.22
Proportion of ADC children per school enrollment	.61*	.40*	.03
School population for the district	---	.77*	-.09
Expenditures for education in the district	.77*	---	-.22
The willingness of a district to tax itself for education	-.09	-.22	---

*$p < .05$

VI. DISCUSSION OF RESULTS

Greater Cost Emphasis for Lower Achieving Pupils

Both the state and federal legislation stipulate that highest priority for compensatory programs should be directed toward children having the greatest need for assistance. However, since federal regulations define a child as eligible whose educational attainment is below that which is typical for pupils his age in the school district, school systems exert great pressure to have all possible children in need served in the eligible schools. Although the problems of these children range from slight to severe, it has been believed that there exists a tendency in the school setting to serve all of these children equally. The evidence of this study points to the contrary since it shows that school districts spend more of their compensatory dollars to help those eligible children who are furthest behind in achievement. This higher investment is generally expended for higher paid and/or more experienced specialists, a lower compensatory staff-pupil ratio, or a greater number of hours of instruction.

Reading Gains Equaled Expectations

This study showed that Connecticut pupils receiving compensatory help made the gains in reading that they should have made when their grade level and pretest reading achievement were taken into consideration. This is a tribute to the Connecticut school districts for accomplish-

ing the objectives of their compensatory programs.

Contrary to what is often thought by compensatory teachers, the study showed that the children furthest behind in achievement made the greatest gains. It also showed that the pattern of achievement gains varied for pupils at different grade levels.

Based on the evidence of this study, a compensatory program objective such as "A pupil should make one month's progress for each month in the program" is an unrealistic goal for an individual child or for all of the pupils of a compensatory teacher.

Compensatory program objectives for a child or for a group of children must take into consideration influences such as the ones presented in this study. The statement of an objective in terms of the reading gain a child might be expected to make can be taken directly from the MAT Gains Tables. The statement of an objective in terms of the reading gain a group of children might be expected to make can be stated as a proportion of the teacher's pupils who achieved as they should when grade level and pretest achievement differences were taken into consideration. It was found in this study that, on the average, sixty-three percent of a compensatory teacher's pupils made the expected reading or math gains when the above mentioned factors were controlled.

Poor Children Achieve Less

In schools with the highest concentration of poor

children, fewer compensatory pupils are making the achievement gains they should than are compensatory pupils in schools with lower concentrations of low-income children. This result became evident in this study only after grade level and pretest achievement differences among children were controlled.

This result is viewed with some concern because the original intent of the federal legislation and the existing emphasis of the state legislation is to help children of the poor do better in school.

Congressional hearings leading up to passage of the 1965 federal legislation emphasized the need to increase school opportunities for children of the poor since American schools were judged as not providing equality of educational opportunity for all their children. It was hoped that this landmark legislation would improve this circumstance.

However, after designating the schools for services to be from the poorest neighborhoods, the legislative writing dropped the emphasis "to better the schooling for poor children." Then the main target of the funds became directed toward the most educationally deprived children from eligible schools in almost every school district in the nation.

The emphasis that evolved over the nine year history of Title I was to help as many school children who needed

assistance as possible. Children of the poor were part of the population served, but not in any concentrated way. Hence, the pattern of lower achievement for children in the poorest neighborhoods has not to date been a principal thrust of the federal legislation.

The current Education Amendments of 1974 de-emphasize the poverty aspects of Title I legislation still further. First, the new Title I legislation has set out to test the possibilities of allocating funds for Title I on the basis of children's educational deficits as an alternative to allocating funds on the basis of low-income. Second, the Title I formula was changed for the 1974-75 year so that Aid for Dependent Children cases minimally influence where the funds are allocated. For example, the three largest Connecticut cities, where the greatest number of poor children attend school, receive only 36 percent of the federal grant to Connecticut under the new legislation. Under the previous legislation in 1973-74, these same cities received 43 percent of the funds coming to Connecticut.

Following this decreased funding, it becomes increasingly difficult for the largest school systems, who already invest more money to educate their children, to improve compensatory programs for poor children.

Concentration Least In Large Schools

In schools having large enrollments, too many children were assigned to compensatory staff to bring about concentrated services. To illustrate: the number of pupils serviced per compensatory staff member was significantly

higher where school enrollments were higher, compensatory costs were lower where school enrollment was higher, and the average number of instructional hours per year per child was lower where compensatory costs were lower. Added to these problems is the fact that in this study achievement tended to be higher as compensatory costs increased.

School enrollments sampled in the study range from 160 to 1,200 pupils, with the mean pupil enrollment being 445. In practical terms, the study points out that concentration of compensatory services generally decreases when the services are taken into schools where the total enrollment approaches 800, 1,000, or 1,200 or more. More effort must be exerted by responsible school district personnel to control assignment of compensatory pupils in these schools.

To approach the problem from another point of view, pupil-compensatory staff ratios should be kept low enough so staff can bring about meaningful changes. Pupil-staff ratios in the compensatory programs sampled ranged from 8-1 to 69-1 with the mean ratio equaling 27-1. Hence, the problem of compensatory efforts becoming too diluted in the larger schools of the state could be controlled by not allowing pupil-staff ratios to extend greatly beyond a 27 to 1 ratio.

More Emphasis Needed in Selecting Those Most in Need of Help

Pupils for whom data was provided in this study were divided about equally between low pretest achievers and

average pretest achievers. With both the state and federal legislation emphasizing that the most educationally deprived should receive top priority, it would seem that a much greater number of children selected for services should have been low pretest achievers.

Several factors, however, may account for the large number of children selected who fall in the "average stanine" (stanines 4-6) at pretesting. First, the "average stanine" category includes stanine 4, at which a pupil is actually below the norm in achievement. Second, some low achieving children already receive additional help under state legislation for special education. Title I funds are not used in this instance where state funds have already been provided. Therefore, these low achieving children do not appear in the compensatory program sample.

If, however, average achieving pupils are being selected over low achieving pupils because they are judged to have more potential or respond more quickly to remediation, then the school district compensatory programs are open to criticism.

A thorough needs assessment should be the basis for each compensatory program. In the case of the state legislation for educationally deprived, the children selected for service should be those most educationally deprived who are also children from families of the poor. In the case of the federal legislation, the children selected for services should be those most educationally deprived in the schools serving the poorest neighborhoods.

VII. VALUE OF THE EVALUATION DESIGN USED IN THE STUDY

Combining Attitude and Achievement Measures

The main purpose of this study was to determine whether or not combining attitude and achievement data of a compensatory teacher's pupils would lead to the identification of the more effective compensatory reading and math programs in the state. And the results of the study showed that combining these measures did not lead to the identification of the more effective programs.

The addition of scores on an attitude-toward-school instrument, the School Sentiment Index, to the pupil's achievement gain decreased the relationship that achievement alone showed with the other information collected.

One should not infer from this that the School Sentiment Index is not an otherwise useful instrument since it has proven effective in the following instances. Approximately 30 Connecticut school districts administered the measure in the spring of 1974 to determine whether their compensatory education pupils had as positive an attitude toward school as did other pupils of the same grade level in the same school system. Results were reported in their year-end evaluation reports, and many indicated "no difference" based on the test analyses. Some also reported a comparison of the responses to individual questions from compensatory and non-compensatory pupils in their school systems. Others

also reported a comparison of their pupils' responses to the statewide results obtained from administering the instrument in the spring of 1973. Using the School Sentiment Index results for evaluation purposes in these ways proved very useful.

Form Used For Data Collection

A single page of information collected from each compensatory teacher provided the clearest picture Connecticut has obtained to date of the association among pupil, school, and community factors relating to school district compensatory efforts.

The information was requested in a way that permitted a thorough check of its accuracy. In terms of test data, for example, teachers were asked to provide raw scores only along with complete information about the test used. A single source then verified the information and reported and transposed the raw scores into other units used in the study.

The single data sheet provided a broad spectrum of information. Four factors relating to the pupil's school attainment were collected. Three measures of program concentration and four methods of determining the attainment for the teacher's group of pupils were made possible from the data sheet. Additionally, two school characteristics and three school district characteristics were analyzed from the descriptive information reported by the teacher

or from additional information the state already had.

Equally important, none of the over two-hundred compensatory paid staff providing data sheets reported that they found completing the single sheet of information about compensatory pupils burdensome.

Determining School Achievement

In this study, standard score gains in reading comprehension and math computation proved to be useful measures of pupils' school achievement when necessary controls were considered.

Most of the evidence of compensatory education studies has been presented in grade equivalence or percentiles because it has been generally thought that the public better understands test results presented in these terms. This has been the practice even though there is wide recognition that standard score test interpretation is more accurate, especially for children whose achievement is generally at the lower end of the scale as is the case for compensatory education pupils.

The strength of the standard score analysis presented in this study was principally due to the control of three major influences which heretofore have mostly been disregarded in the analysis of test results for compensatory education children. The three influences are: (1) the combination of scores from different tests which are not comparable, (2) the combination of scores of children in different school grade levels, and (3) the combination of

scores of children who differ in their pretest school achievement.

This study controlled for the first distorting influence by including only test results from specific reading or math subtests of the Metropolitan or results of subtests from any test instrument for which tables were available to permit accurate transformation from the test to the Metropolitan subtests. The Stanford was very useful in this respect. Six other widely used tests were almost equally useful due to the 1974 Anchor Test Study except for the narrow range of grade levels (four through six) for which these tests were equated and the fact that equivalent scale scores were available for reading subtests only.

A second major distorting influence controlled in this study was the differences of pupils' standard score achievement gains from one grade level to the next. Metropolitan Gains Tables make it clear that test gain patterns of pupils vary from one grade level to the next as well as from one Metropolitan Achievement Tests subtest to another. Hence, the test information provided for each pupil in this study was analyzed separately for the specific subtest administered and the specific grade level of the pupil to whom the test was administered.

A third generally distorting influence was controlled in this study by analyzing pupil test scores separately according to whether they started out low, average, or high

in achievement at the beginning of the school year. Again, the Metropolitan Gain Tables were helpful in this respect as these tables separate the standard score gain patterns of pupils in the various subtests in terms of these differences among pupils.

Interpreting Test Information

More than several options of handling test information are possible in large-scale evaluations where the data collecting procedure and controls employed in this study are used. Two are pointed out below as deserving special attention.

First, individual pupil information can be the basis of the analysis. A determination can be made, for example, of the relationships among pupil, program, school, and community variables where grade levels and pretest achievement differences among pupils are held constant.

Second, achievement test analyses can be undertaken where the combined efforts of each compensatory teacher's pupils serve as the basis of analysis. This was accomplished in this study by determining for each participating teacher the proportion of his or her pupils who made the expected achievement gains in the areas of reading or math.

School district evaluators of compensatory pupil progress should first concentrate their efforts on determining which pupils did or did not make the expected standard

score reading or math gains from October to April. Then they should attempt to discover the reasons why some made the expected gains and some did not.

Controlling Test Administration

Two practices of school district personnel resulted in gain scores for Connecticut compensatory children appearing to be greater than the MAT Gains Tables results.

First, where test scores are used to select low achieving pupils for compensatory services, they should not in turn be used in any pre-post test gain score calculation. Under these circumstances, negative test measurement error is at a maximum tending to inflate the obtained gain scores.

School districts should do most of their pupil identification in the spring of the preceding year so that the October pretesting for evaluation purposes presents a truer picture of how pupils "start the school year."

Second, it is important to administer the post-testing in April if the pupils were pretested in October, or in early May if the pupils could not be pretested until November. This accomplishes two purposes. First and most important, it completes testing early enough so evaluators can present results to staff and parents before the close of the school year. Second, it provides a constant six-month interval between test administrations for compensatory education pupils in a state and one which

coincides with the test interval used to obtain the Metropolitan Gains Tables results.

One final consideration pertains to the test that is to be administered to compensatory education pupils. For evaluation purposes, only a reading comprehension subtest should be administered to pupils low in their reading skills. A math computation subtest should be administered to pupils who are receiving instruction primarily in basic math skill computations. Only a math concepts subtest should be administered to pupils receiving instruction primarily in math concepts. It is understood that these tests should be administered only to English-speaking compensatory education pupils.

For a statewide model such as this to provide important and representative outcomes, school districts must provide single-page data sheets for each compensatory paid staff person providing reading and math related services to compensatory pupils. The specific tests and appropriate levels to be used for children at each grade level are presented in Appendix C of this report.

NOTES

1
See Connecticut State Department of Education, Compensatory Education in Connecticut, 1972-73. (Hartford: Bureau of Evaluation and Educational Services, 1973).

2
See Department of Health, Education and Welfare, The Effectiveness of Compensatory Education--Summary and Review of the Evidence. (Washington, D.C.: Office of the Secretary, April 23, 1972, p. 12).

3
See Connecticut State Department of Education, Attitudes Toward School of Connecticut Compensatory Education Children. (Hartford: Bureau of Evaluation and Educational Services, September, 1973). See also James W. Popham, Empirical Based Revision of Affective Measuring Instruments. A paper presented to the California Educational Research Association, November, 1972, San Jose, California.

4
See Instructional Objectives Exchange. Self Concept Objectives Collection, Box 24095, Los Angeles, California 90024. Permission granted by the Instructional Objectives Exchange to reproduce these tests for use in Connecticut.

5
See Michael D. Beck, Harcourt, Brace, Jovanovich, MAT Standard Score "Gains" Over a Six Month Period by Grade for Three Subgroups and Total Group. A paper presented to the Northeastern States Title I Conference, April 2-5, 1973, Stowe, Vermont.

6
See Metropolitan Achievement Tests Special Report, No. 16. (New York: Test Department, Harcourt, Brace, Jovanovich, Inc., 1971). See also Stanford Research Report #5,6. (New York: Test Department, Harcourt, Brace, Jovanovich, Inc., 1973).

7
See Peter G. Loret, et al, Educational Testing Service, Anchor Test Study (Washington: U.S. Office of Education, Department of Health, Education and Welfare, 1974).

APPENDIX A

School Sentiment Index

Primary Level
Intermediate Level
Secondary Level

SCHOOL SENTIMENT INDEX

Primary Level

1. Is your teacher interested in the things you do at home?
2. When you are trying to do your schoolwork, do the other children bother you?
3. Does your teacher give you work that is too hard?
4. Do you like to tell stories in front of your class?
5. Do other children get you into trouble at school?
6. Is school a happy place for you to be?
7. Do you often get sick at school?
8. Does your teacher give you enough time to finish your work?
9. Is your school principal friendly toward the children?
10. Do you like to read in school?
11. When you don't understand something, are you afraid to ask your teacher a question?
12. Are the other children in your class friendly toward you?
13. Are you scared to go to the office at school?
14. Do you like to paint pictures at school?
15. Do you like to stay home from school?
16. Do you like to write stories in school?
17. Do you like school better than your friends do?
18. Does your teacher help you with your work when you need help?
19. Do you like arithmetic problems at school?
20. Do you wish you were in a different class at school?
21. Do you like to learn about science?
22. Do you like to sing songs with your class?
23. Does your school have too many rules?
24. Do you always have to do what the other children want to do?
25. Do you like the other children in your class?
26. Are you always in a hurry to get to school?
27. Does your teacher like some children better than others?
28. Do other people at school really care about you?
29. Does your teacher yell at the children too much?
30. Do you like to come to school every day?

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SCHOOL SENTIMENT INDEX

Intermediate Level

1. Other children bother me when I'm trying to do my school work.
2. My teacher always tries to tell me when she is pleased with my work.
3. My teacher is interested in the things I do outside of school.
4. Each morning I look forward to coming to school.
5. This school has rules like a jail.
6. In my class, my teacher allows us to make many decisions together.
7. My teacher grades too hard.
8. Other children often get me into trouble at school.
9. My teacher doesn't explain things very well.
10. My teacher listens to what I have to say.
11. It is hard for me to stay happy at school because I wish I could be somewhere else.
12. There are many different activities at school from which I can choose what I would like to do.
13. When I do something wrong at school, I know I will get a second chance.
14. My teacher gives me work that's too easy because she's lazy.
15. I often must do what my friends want me to do.
16. My teacher tries to make school interesting to me.
17. Most school days seem like they will never end.
18. My teacher does not care about me.
19. I don't like having to go to school.
20. The grown-ups at my school are friendly.
21. My teacher gives me as many chances as other children to do special jobs in my classroom.
22. The other children in my class are not friendly toward me.
23. My teacher tries very hard to help me understand hard schoolwork.
24. I like to do my homework.
25. My teacher doesn't understand me.
26. I often wish I was somebody who doesn't have to go to school.
27. This school has events all the time that make me happy I attend school here.
28. My teacher treats me fairly.
29. My teacher tries to make sure I understand what she wants me to do.
30. I really like working with the other children in my class.
31. I'm afraid to tell my teacher when I don't understand something.
32. I feel good when I'm at school because it's fun.
33. I get scared when I have to go to the office at school.
34. My teacher unfairly punishes the whole class.
35. My teacher doesn't give very good tests.
36. School is a good place for making friends.
37. My teacher tries to do things that the class enjoys.
38. I like trying to work difficult puzzles.
39. I'm scared of my teacher because she can be mean to us.

40. I like to stay home from school.
41. When I have a problem on the playground at recess, I know I can find someone to help me.
42. I don't like most of the children in my class.
43. My teacher is not very friendly with the children.
44. The biggest reason I come to school is to learn.
45. My school looks nice.
46. My teacher grades me fairly.
47. I think a new child could make friends easily in my class.
48. I feel like my teacher doesn't like me when I do something wrong.
49. My class is too crowded.
50. When a new child comes into our class, my friends and I try very hard to make him or her feel happy.
51. My teacher likes some children better than others.
52. I feel unhappy if I don't learn something new in school each day.
53. When I do something wrong, my teacher corrects me without hurting my feelings.
54. I like school because there are so many fun things to do.
55. My school doesn't have very many supplies for us to use.
56. My teacher would let the class plan an event alone.
57. My teacher is often too busy to help me when I need help.
58. It would be nice if I never had to come back to school again after today.
59. My teacher doesn't want to hear the children's ideas on classroom rules and behavior.
60. My teacher usually explains things too slowly.
61. Older children often boss my friends and me around at my school.
62. I don't think there is very much to do at this school.
63. My teacher bosses the children around.
64. My teacher gets angry if the class isn't quiet.
65. My teacher usually doesn't know what to do in class.
66. I like my teacher because he (she) is understanding when things go wrong.
67. If I had a problem outside of school I could go to my teacher for help.
68. My teacher cares about the feelings of the pupils in his (her) class.
69. My teacher doesn't care what happens to me outside of school.
70. My teacher is usually grouchy in class.
71. I have my own group of friends at school.
72. I like to work with other children on class projects.
73. Learning new things is not very much fun.
74. When my schoolwork is hard I don't feel like doing it.
75. I don't do very much reading on my own.
76. Almost everything I learn in school is dull.
77. I don't care what scores I get on my schoolwork.
78. I would rather do almost anything else than study.
79. I'm very happy when I'm at school.
80. School is exciting.
81. I don't like school because it's too much work.

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SCHOOL SENTIMENT INDEX

Secondary Level

1. Most of my teachers try to explain to me why I deserve the grades I earn on assignments and tests.
2. I do my best in school because I can get ahead in the world with a good education.
3. Most of my teachers seem interested in the things I do outside of school.
4. Each morning I look forward to coming to school.
5. My school has too many rules.
6. Most of my teachers do not allow students much choice in what they study in class.
7. I often feel rushed and nervous at school.
8. Most of my teachers give assignments that are too difficult.
9. Students here are not as friendly as in other schools.
10. Most of my teachers try to make their subjects interesting to me.
11. I hate having to do homework.
12. My teachers are interested in what I have to say.
13. It is clear to me why I shouldn't drop out of school.
14. This school is run like a prison.
15. In most of my classes, I have the opportunity to choose assignments which are most interesting to me.
16. I have signed up for a subject just because it seemed like it would be interesting.
17. Most of my teachers give assignments that are just busy-work.
18. I enjoy working on class projects with other students.
19. Most of my teachers really like their subjects.
20. I would rather play a game that I already know than learn a new one.
21. Most of my teachers seem personally concerned about me.
22. I enjoy learning in school more than learning on my own.
23. I don't usually enjoy working on puzzles and trying to solve difficult problems.
24. I think there is too much pressure in school.
25. Most of my teachers will accept suggestions from their students.
26. School is a good place for making friends.
27. I like the challenge of a difficult assignment.
28. Most of my teachers don't try very hard to understand young people.
29. Skipping school whenever I can doesn't really bother me.
30. I find it difficult to start working on my assignments until they are almost due.
31. I'm very interested in what goes on at this school.
32. Most of the decisions in my classes are made by the teachers.
33. My teachers ask me to memorize too many facts.
34. There are other reasons for going to school besides just learning.
35. There are important subjects not taught in school now which I would be interested in taking if they were offered.
36. Students have voice in determining how this school is run.

37. Most of my teachers have encouraged me to think for myself.
38. I think most of my teachers are fair to me.
39. I generally try to get involved in many school activities.
40. Most of my teachers give me some idea of what will be on their tests.
41. I really like most of the kids at this school.
42. My teachers don't allow me to be as creative as I am able to be.
43. Most of my teachers do not recognize my right to a different opinion.
44. It would be difficult to get the most popular kids in school to include those who aren't as popular in their activities.
45. Even if I wanted to join certain groups here at school, I just wouldn't be accepted.
46. I enjoy talking to many of my teachers after class.
47. Most of my teachers are critical of the way young people dress or talk.
48. In order to win an office at this school you've got to be in the right crowd.
49. Many of my teachers frequently show a lack of preparation.
50. It isn't difficult for a new student to find friends here.
51. Many of my teachers could be trusted if I discussed a personal problem with them.
52. My favorite classes, regardless of subject, are those in which I learn the most.
53. School is important to me because I find many of the things I learn are useful outside of school.
54. School is just a place to keep kids off the street.
55. Our school is so large, I often feel lost in the crowd.
56. I usually get the grade I deserve in a class.
57. Teachers are usually the friendliest with the bright students.
58. I try to do good work in my classes, because you never know when the information will be useful.
59. Most of my teachers are still fair with me as a person even when I've done poorly on my school work.
60. There are enough different groups here at school for any type of student to find friends.
61. Most of my teachers make it clear about how much the students can "get away with" in class.
62. I enjoy the social life here.
63. Everyone knows who the real losers in this school are.
64. There are many closed groups of students here.
65. Most of my teachers like working with young people.
66. Sometimes I just can't put a book down until I'm finished with it.
67. Most of my teachers are too concerned with discipline sometimes.
68. It is difficult for me to see my education as a stepping stone to future success.
69. At school, other people really care about me.
70. If I thought I could win, I'd like to run for an elected student body office.
71. Most of my teachers will discuss any changes made to my grade.

72. M st of my teachers just don't care about students if they're not going to college.
73. I usually never do more school work than just what is assigned.
74. Most of the teachers at my school cannot control their classes.
75. It is possible to be popular in school and also be an individualist.
76. Lunch time at school is not fun.
77. Many of my teachers are often impatient.
78. If I had the choice, I wouldn't go to school at all.
79. Many of my teachers have "pets".
80. Most of my teachers often waste too much time explaining things.
81. Occasionally I have discovered things on my own that were related to some of my school subjects.
82. If school were more related to the skills I'll need after I graduate, I might be more interested.

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APPENDIX B

Individual Pupil Information Form and Instructions

1973-74 SADC - TITLE I INDIVIDUAL PUPIL INFORMATION FORM

1. Responding SADC-Title I person:_____ 2. School:_____

3. Compensatory program title:_____ 4. Town:_____

5. Number of pupils receiving compensatory help from you in 1973-74:_____

6. Hours per week of compensatory help provided by you in 1973-74:_____

7. Number of weeks of compensatory help provided by you in 1973-74:_____

8. Cost of the 1973-74 compensatory help you provided:_____

9. Provide information below for a sample of the pupils who received compensatory help from you in 1973-74 (see instructions on the next page).

Pupil Symbol	Gr Lvl	Name of Test and Yr. Pub.	Subtest for Which RAW SCORES Are Provided	Pre & Post Test Lvls	Pre & Post Test Forms	Time of Pre Test*	Pre Test Raw Score		Time of Post Test*	Post Test Raw Score		School Sentiment Index Lvl	School Sentiment Index Total Score

*Record date of testing in grade equivalent units. If the pretest is between September 15 and October 14 for fourth graders, record it as 4.1, for example. If the post-test is between May 15 and June 14, record it as 4.9. If during other months, use the same rationale.

Instructions for Completing the Individual Pupil Information Form

Item 1 Responding SADC-Title I person: The teacher, aide, or teacher-aide team who provides supplementary services to educationally deprived pupils who are financed by the State Act for Disadvantaged Children or Title I of the Elementary and Secondary Education Act.

Item 2 School: The name of the school where compensatory services were provided by the SADC or Title I supported person or team or, the name of the school in the attendance area where those pupils who received help resided.

Item 3 Compensatory program title: The title or state project number of the compensatory program as indicated in the school district proposal and year-end evaluation.

Item 4 Town: The school district sponsoring the compensatory education program.

Item 5 Number of pupils receiving compensatory help: The total number of pupils who received compensatory services from the SADC or Title I supported person or team during the 1973-74 school year.

Item 6 Hours per week of compensatory help: The number of hours per week of compensatory services provided by the SADC or Title I supported person or team. Count only the hours of direct services provided. As a guide, the direct services provided by a classroom teacher average 25 to 30 hours per week.

Item 7 Total weeks of compensatory help: The total number of weeks during the 1973-74 year that compensatory services were provided by the SADC or Title I supported person or team. As a guide, schools are in session approximately 36 weeks per school year.

Item 8 Total cost for the compensatory help you provided: This is the estimated cost of duplicating your effort elsewhere. To approximate this cost, estimate the following and sum the amounts:

a. Your salary or salaries of the teacher-aide team (include fringe). $_____

b. Estimate of 1973-74 cost of instructional supplies and equipment used to provide your compensatory help. $_____

c. Estimate of travel or transportation cost financed by SADC or Title I. $_____

d. Estimate of supervisory cost and teacher or aide training financed by SADC or Title I. $_____

e. Other significant costs not included above needed to duplicate your effort elsewhere (exclude SADC-Title I expenditures of past years). $_____

A copy of the compensatory program line item budget should be helpful in estimating the above costs. The town SADC-Title I supervisor or director should be consulted about the total estimated cost of your effort.

Item 9 Information from a sample of the pupils receiving compensatory help from you: Pre- and post- achievement test scores and pupil responses to an attitude instrument administered in May are needed for each pupil for whom results are to be reported. Pupils making up the sample are to be selected in the following way:

1. Where you provided compensatory reading or math help to fifteen or more pupils in grade levels 1 through 8 and have administered the appropriate level or the test for the pupil's school grade placement of any of the tests listed below with approximately seven months interval (fall to spring) between testing, select your sample from among these pupils.

   Metropolitan Achievement Tests, 1970, Forms F and G
   Reading, Math Computation, or Math Concepts subtests

   Metropolitan Achievement Tests, 1958, Forms A and B
   Reading, Math Computation, or Math Concepts subtests

   Stanford Achievement Tests, 1964, Forms W, X, Y, Z
   Paragraph Meaning, Arithmetic Computation, or Arithmetic Concepts subtests

   If you helped more than fifteen such pupils, list the pupils alphabetically and designate every other pupil starting with the first until you have reached a total of fifteen pupils. Report the pre- and post-test raw scores for one of the subtests listed above for each of the selected fifteen pupils. Also provide these pupils' responses to the School Sentiment Index administered during the month of May. (See the following section regarding the attitude test administration.

2. Where you provided compensatory reading help to fifteen or more pupils in grade levels 4 through 6 and have administered the appropriate level of the test for the pupil's school grade placement of any of the following tests, using a fall to spring or spring to spring testing pattern, select your sample from among these pupils.

   California Achievement Tests (1970) Reading, Forms A and B
   Comprehensive Tests of Basic Skills (1968) Reading, Forms Q and R
   Gates-MacGinitie Reading Tests (1965) Comprehension, Survey D
   Iowa Tests of Basic Skills (1970) Reading, Forms 5 and 6
   Metropolitan Achievement Tests (1970) Reading, Forms F and G
   Metropolitan Achievement Tests (1958) Reading, Forms A and B
   Sequential Tests of Educational Progress (1969) Reading, Forms A and B
   Stanford Achievement Tests (1964) Paragraph Meaning, Forms W, X, Y, and Z

APPENDIX C

Appropriate Achievement Tests for Use with
MAT Gains Tables In Study

MAT Gains Tables
Reading, Math Computation, and Math Concepts

APPROPRIATE ACHIEVEMENT TESTS FOR USE WITH
MAT GAINS TABLES IN STUDY

Grade	Metropolitan Ach. Test Subtest[1] Battery Level 1970	Stanford Ach. Test Subtest[2] Battery Level 1964	1973
2	Primary II	Primary II	Primary II
3	Elementary	Primary II	Primary III
4	Elementary	Intermediate I	Intermediate I
5	Intermediate	Intermediate II	Intermediate II
6	Intermediate	Intermediate II	Intermediate II
7	Advanced	Advanced	Advanced
8	Advanced	Advanced	Advanced

[1] MAT subtests: Reading (grades 2-8); Math Computation (grades 3-8); Math Concepts (grades 3-8); Total Math (grade 2 only)

[2] SAT subtests (1964): Paragraph Meaning (grades 2-8); Arithmetic Computations (grades 2-8); Arithmetic Concepts (grades 2-8)

(1973): Reading (grades 2-8); Math Computation (grades 2-8); Math Concepts (grades 2-8)

Additional Standardized Tests Appropriate for Grades Four, Five, and Six

	Grade 4	Grade 5	Grade 6
CAT 1970	Level 3, Form A* Comprehension	Level 3, Form A Comprehension	Level 4, Form A Comprehension
CTBS 1968	Level 2, Form Q Comprehension	Level 2, Form Q Comprehension	Level 3, Form Q Comprehension
GMT 1964	Survey D, Form IM Comprehension	Survey D, Form IM Comprehension	Survey D, Form IM Comprehension
ITBS 1971	Level 10, Form 5 Reading Comprehension	Level 11, Form 5 Reading Comprehension	Level 12, Form 5 Reading Comprehension
SRA-ACH 1971	Blue Level, Form E Reading	Blue Level, Form E Reading	Green Level, Form E Reading
STEP II 1969	Level 4, Form A Part 2	Level 4, Form A Part 2	Level 4, Form A Part 2

*Test form for pretest; use alternate test forms for post-testing where available.

MAT GAINS TABLES

Median, Mean and S.D. of MAT Standard Score "Gains" Over a Six-Month Period by Grade for Three Subgroups and Total Group (N=1461-2861 per grade)

READING

	HIGH PRETEST			AVERAGE PRETEST			LOW PRETEST			TOTAL GROUP		
Grade	Median	Mean	S.D.	Median	$\bar{x}$	S.D.	Median	$\bar{x}$	S.D.	Median	Mean	S.D.
2	2.8	3.4	9.8	8.0	7.8	6.8	11.3	11.3	9.9	7.6	7.5	8.6
3	5.1	5.2	10.1	4.9	5.0	7.4	5.3	7.1	14.0	5.0	5.0	9.8
4	2.3	2.1	8.3	4.5	4.5	7.9	6.3	8.5	15.5	4.4	4.8	10.4
5	.3	.4	7.1	3.6	3.0	7.0	12.7	14.6	16.9	3.6	4.6	11.0
6	-3.8	-3.4	8.1	2.6	2.4	6.2	8.3	11.2	17.5	2.0	2.4	10.9
7	1.8	2.2	8.9	1.6	1.2	8.2	5.3	6.3	13.4	2.2	2.5	9.9
8	.4	.7	9.0	2.3	2.3	8.6	2.1	2.9	11.8	2.0	2.0	9.5

Median, Mean and S.D. of MAT Standard Score "Gains" Over a Six-Month Period by Grade for Three Subgroups and Total Group (N=1461-2861 per grade)

MATH COMPUTATION

Grade	HIGH PRETEST			AVERAGE PRETEST			LOW PRETEST			TOTAL GROUP		
	Median	Mean	S.D.	Median	$\bar{X}$	S.D.	Median	$\bar{X}$	S.D.	Median	Mean	S.D.
3	4.4	4.0	8.0	8.8	9.0	7.2	11.4	12.6	10.9	8.2	8.5	8.7
4	8.2	8.1	8.2	11.0	10.8	8.0	10.2	12.2	12.5	10.2	10.5	9.3
5	5.4	5.2	6.3	5.9	6.2	7.0	9.5	11.8	13.4	6.2	7.0	8.8
6	3.1	3.3	7.2	6.4	6.3	7.3	5.8	8.7	14.1	5.4	6.0	9.2
7	1.7	2.5	7.2	2.7	1.6	7.3	4.7	6.3	12.6	2.5	2.8	8.8
8	1.1	2.7	8.9	2.8	3.1	6.6	5.0	4.8	11.4	2.7	3.3	8.5

MATH CONCEPTS

Grade	HIGH PRETEST			AVERAGE PRETEST			LOW PRETEST			TOTAL GROUP		
	Median	Mean	S.D.	Median	$\bar{X}$	S.D.	Median	$\bar{X}$	S.D.	Median	Mean	S.D.
3	5.6	5.0	8.0	8.3	8.1	7.7	9.9	10.6	10.4	8.1	7.8	8.6
4	3.0	2.9	6.7	7.3	7.2	6.9	8.2	9.7	13.8	6.4	6.8	8.9
5	4.2	4.7	7.5	4.2	4.0	7.7	7.7	10.1	14.9	4.7	5.3	9.6
6	6.4	6.2	7.8	4.0	3.9	7.6	4.8	7.7	16.6	4.7	5.2	10.0
7	1.0	1.1	8.0	1.6	2.0	7.1	5.2	6.0	11.2	2.4	2.7	8.6
8	1.4	1.6	8.0	2.2	2.5	7.7	3.6	5.0	11.9	2.3	2.8	9.0

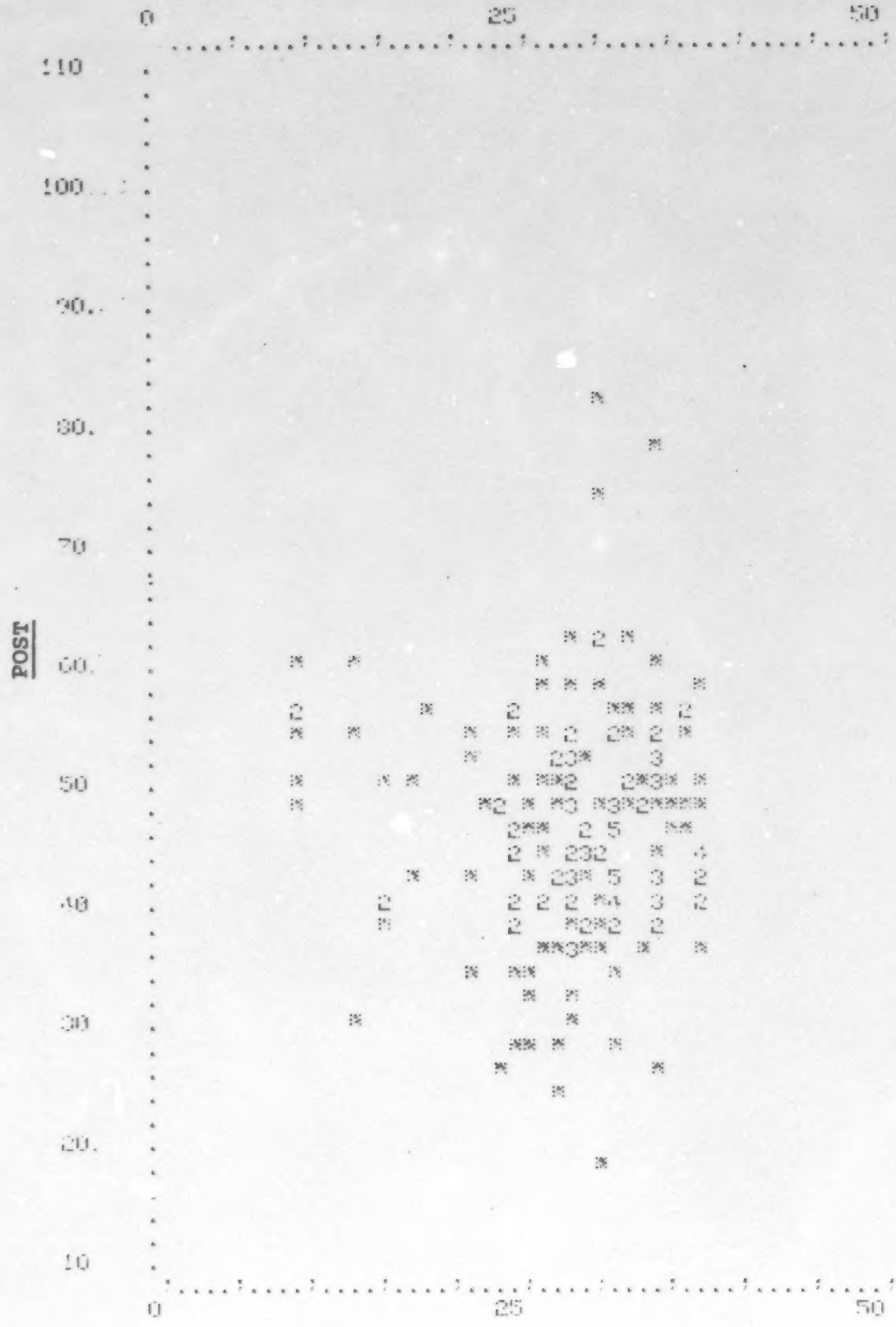
TOTAL MATH

Grade	HIGH PRETEST			AVERAGE PRETEST			LOW PRETEST			TOTAL GROUP		
	Median	Mean	S.D.	Median	$\bar{X}$	S.D.	Median	$\bar{X}$	S.D.	Median	Mean	S.D.
2	6.2	7.1	8.8	10.5	10.8	6.2	16.1	16.0	9.9	10.7	11.0	8.3

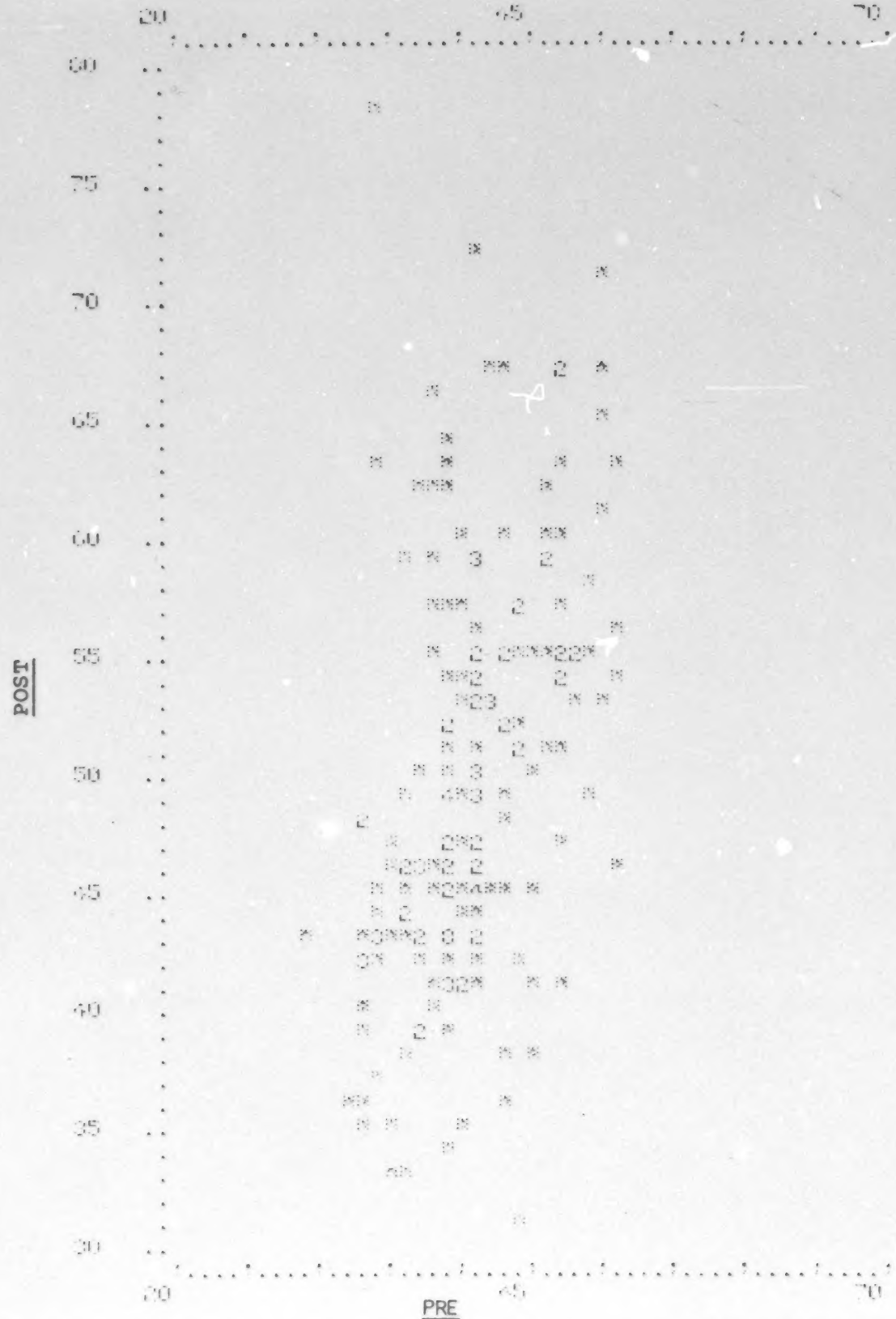
APPENDIX D

Scatter Diagrams for Pupil Pre-Post Test Results

GRADE 2 LOW
PRE AND POST

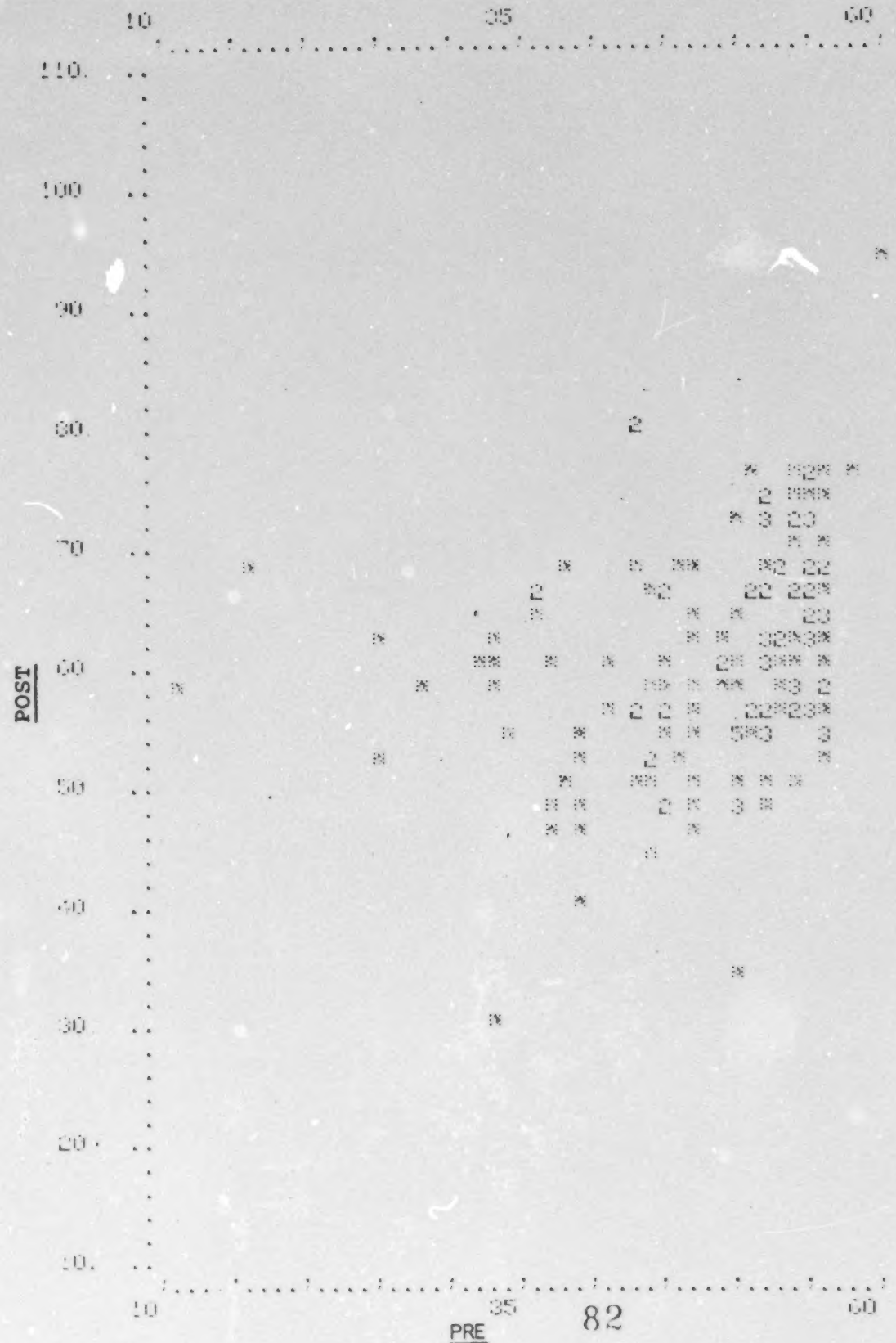


GRADE 2 AVERAGE
PRE AND POST



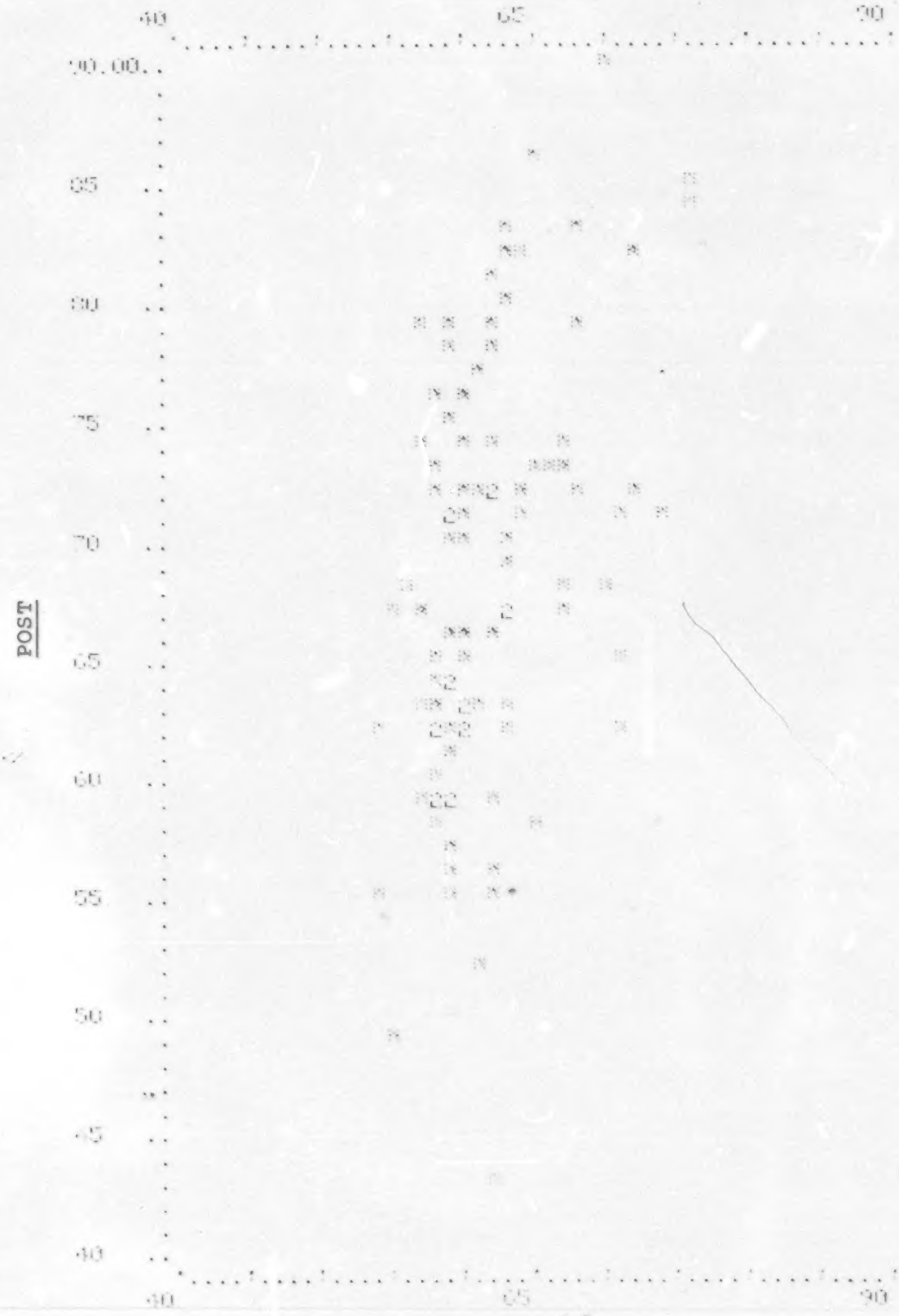
GRADE 4 LOW

PRE AND POST



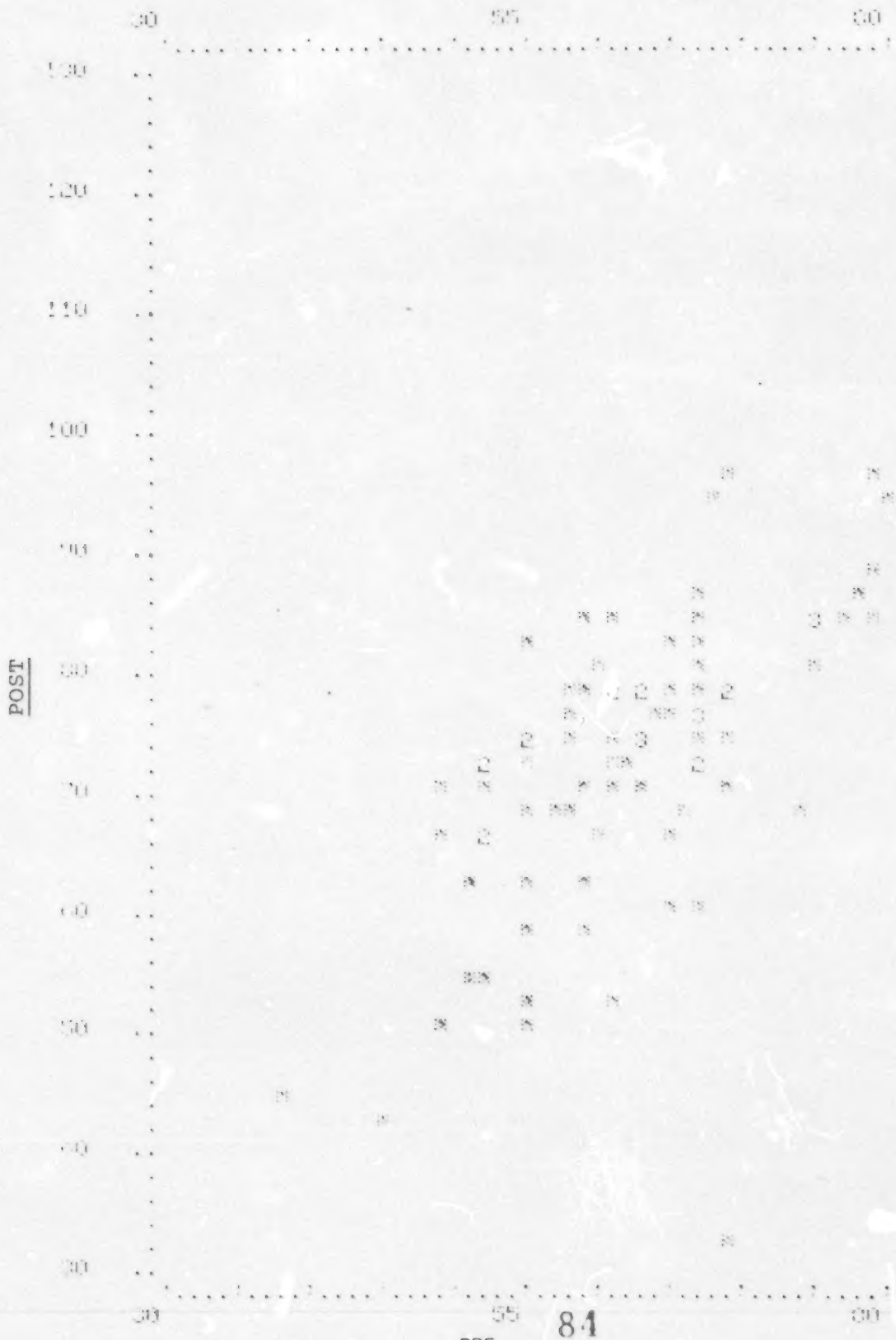
GRADE 4 AVERAGE

PRE AND POST

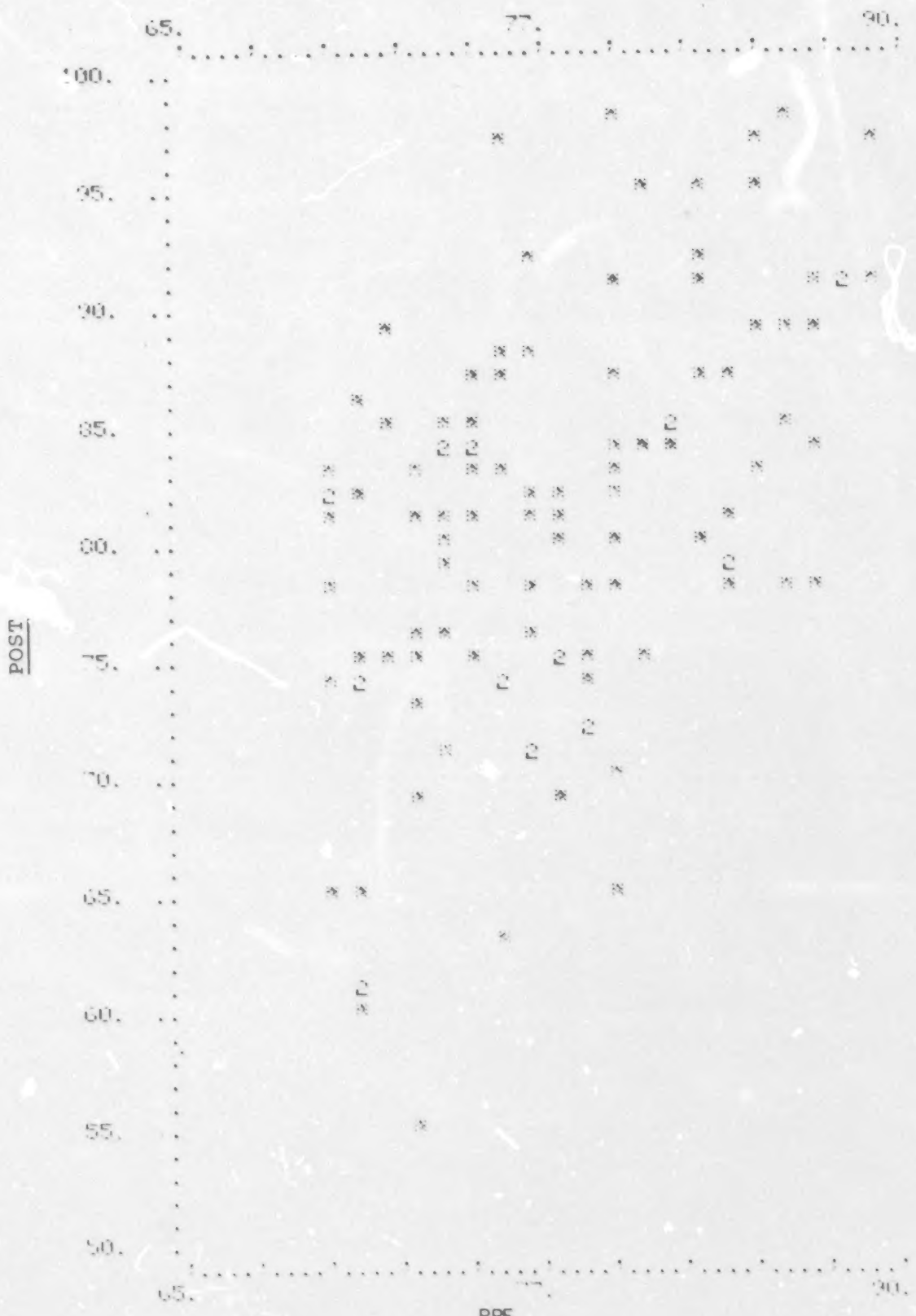


GRADE 6 LOW

PRE AND POST



GRADE 6 AVERAGE
PRE AND POST



APPENDIX E

Basic Data of This Evaluation Study

STATISTICAL DATA AND INTERCORRELATIONS FOR 10 VARIABLES BY TEACHERS

(N=111)

	Mean	SD	Range
% Attitude	57.6	23.03	0-100
% Gain	63.3	21.67	0-100
Attitude and Gain	60.6	16.29	25-91
Pupil-Teacher Ratio	27.0	11.46	8-69
Instructional Hours	31.4	15.27	7-85
Program Cost	381.5	171.92	67-945
Pretest Stanine	34.0	8.35	10-57
Standard Score Gain	106.7	58.53	0-284
School Enrollment	445.1	207.89	164-1227
School ADC	12.5	14.36	1-60

CORRELATION COEFFICIENTS

	% Gain	Att + Gain	P-T Ratio	Hours	Prog Cost	Pre Test Stanine	SS Gain	School Enroll	School ADC
% Attitude	.06	.75*	.14	-.06	.05	-.05	.01	.06	.12
% Gain		.71*	-.12	.05	.06	-.32*	.70*	-.08	-.29*
Attitude + Gain			.02	-.01	.08	-.25*	.47*	-.02	-.11
Pupil Teacher Ratio				-.51*	-.15	.05	-.05	.45*	.08
Instructional Hours					.27*	.00	.02	-.16	.04
Program Cost						-.22*	.23*	-.21*	.12
Pretest Stanine'							-.65*	.13	.17
Standard Score Gain								-.14	-.01
School Enrollment									-.17

* Statistically significant $p < .05$

STATISTICAL DATA FOR ALL 13 VARIABLES BY DISTRICT

(N=42)

Variable	Mean	Standard Deviation	Standard Score Range Minimum	Maximum
% Attitude	59.2	21.66	76	119
% Gain	63.0	20.31	86	112
Attitude + Gain	61.2	15.78	80	118
Pupil-Teacher Ratio	30.0	12.83	86	131
Instructional Hours	32.4	16.71	88	132
Program Cost	345.8	160.31	85	122
Pretest Stanine	35.5	7.95	79	127
Standard Score Gain	96.1	54.84	82	132
School Enrollment	496.9	203.9	84	136
School ADC	8.2	9.77	93	139
District School Population	7581.7	8574.67	92	130
District PPE	988.0	185.86	84	127
District Effort	1929.5	562.24	79	119

CORRELATION COEFFICIENTS
ALL 13 VARIABLES BY DISTRICT

(N=42)

	% Gain	Att + Gain	P-T Ratio	Inst Hrs	Prog Cost	Prtst Stanine	SS Gain	Sch Enroll	Sch ADC	Dist Pop	Dist PPE	Dist Effort
% Att	.12	.76*	.09	-.08	.16	-.17	.13	.04	.10	.09	.08	.21
% Gain		.74*	-.09	-.01	.05	-.12	.74*	-.09	-.15	-.01	.01	.20
Att + Gain			.01	-.05	.14	-.20	.55*	-.03	-.06	.03	.05	.27
P-T Ratio				-.68*	-.12	.08	-.02	.44*	.00	.02	-.06	-.26
Instructional Hrs					.11	-.04	-.07	-.16	.07	-.07	-.05	.29
Program Cost						-.40*	.28	-.25	.23	.30	.29	.05
Pretest Stanine							-.56*	.10	-.02	-.04	.01	.00
SS Gain								-.12	.09	.10	.10	.25
School Enrollment									-.12	-.08	-.22	-.22
School ADC										.61*	.40*	.03
District Pop											.77*	-.09
District PPE												-.22

* Statistically significant ($p < .05$)

Category	N	Pre Test Mean	Pre Test SD	Post Test Mean	Post Test SD	Gain Mean	Gain SD	Attitude Mean	Attitude SD
Gr 2 Low	187	28.0	6.9	45.6	9.1	19.0	12.2	19.9	4.7
Gr 2 Aver	192	40.6	4.6	49.4	8.5	8.7	7.6	19.8	4.8
Gr 4 Low	163	48.5	8.0	60.9	9.1	12.4	10.3	51.3	13.1
Gr 4 Aver	97	61.9	4.7	68.4	8.9	6.3	7.9	51.5	13.1
Gr 6 Low	85	62.3	8.4	72.9	12.0	11.4	8.8	47.4	13.9
Gr 6 Aver	110	77.9	5.3	80.7	8.7	3.0	7.8	47.4	13.5

STATISTICAL DATA AND INTERCORRELATION FOR INDIVIDUAL PUPIL DATA

CORRELATION COEFFICIENTS

	Post Test	Gain	Attitude
Pre Test			
Gr 2 Low	-.03*	-.58	-.02*
Gr 2 Average	.45	-.09*	-.02*
Gr 4 Low	.29	-.52	-.01*
Gr 4 Average	.44	-.13*	.13*
Gr 6 Low	.61	-.08*	-.11*
Gr 6 Average	.49	-.12*	-.11*
Post Test			
Gr 2 Low		.75	.06*
Gr 2 Average		.84	-.08*
Gr 4 Low		.67	-.02*
Gr 4 Average		.81	.00*
Gr 6 Low		.69	-.06*
Gr 6 Average		.79	.05*
Gain			
Gr 2 Low			.08*
Gr 2 Average			-.07*
Gr 4 Low			-.01*
Gr 4 Average			-.04*
Gr 6 Low			.02*
Gr 6 Average			.13*

* Not statistically significant